U.S. Department of Transportation

Federal Aviation Administration

Advisory Circular

SUBJECT: Approval of Offshore Standard Approach Procedures, Airborne Radar Approaches, and Helicopter En Route Descent Areas

Date: 4/12/99
Initiated by: AFS-420

AC No: 90-80B
Change:

1. **PURPOSE.** This advisory circular (AC) provides criteria and describes acceptable methods for obtaining approval to use the Offshore Standard Approach Procedure (OSAP), the Airborne Radar Approach (ARA), and the Helicopter En Route Descent Area (HEDA).

2. **PRINCIPAL CHANGES.** This advisory circular retains the ARA and parallel offset OSAP that were in AC 90-80A, and adds the Delta 30° OSAP and the HEDA. Global Positioning System (GPS) navigation for the OSAP and HEDA procedures has also been added.

3. **CANCELLATION.** Advisory Circular 90-80A, Approval of Offshore Helicopter Approaches, dated October 21, 1988, is canceled.

4. **RELATED TITLE 14 OF THE CODE OF FEDERAL REGULATIONS (14 CFR).**

   a. **14 CFR Part 27**, Airworthiness Standards: Normal Category Rotorcraft.

   b. **14 CFR Part 29**, Airworthiness Standards: Transport Category Rotorcraft.

   c. **14 CFR Part 43**, Maintenance, Preventive Maintenance, Rebuilding and Alteration.

   d. **14 CFR Part 91**, General Operating and Flight Rules.

   e. **14 CFR Part 135**, Air Taxi Operators and Commercial Operators.

5. **RELATED READING MATERIAL.**

   a. **Federal Aviation Administration (FAA) documents:**

      (1) **FAA Order 8260.3**, United States Standard for Terminal Instrument Procedures (TERPS).

      (2) **FAA Order 8400.10**, Air Transportation Operations Inspector's Handbook, Chapter 7.

Copies of orders in paragraphs 6a(1) and (2) may be purchased from:

Superintendent of Documents
U.S. Government Printing Office
P.O. Box 371954
Pittsburgh, PA 15250-7954
Phone: (202) 512-1800
FAX: (202) 512-2250
Internet: HTTP://www.access.gpo.gov/su_docs

(3) **FAA Order 8260.19,** Flight Procedures and Airspace.

(4) **FAA Order 8260.42,** Helicopter Global Positioning System (GPS) Nonprecision Approach Criteria.

(5) **AC 90-94**, Guidelines for Using GPS Equipment for IFR En Route and Terminal Operations and for Nonprecision Instrument Approaches in the U.S. National Airspace System.

(6) **AC 20-121,** Airworthiness Approval of Airborne LORAN C Navigation Systems for Use in the U.S. National Airspace System.

(7) **AC 20-138,** Airworthiness Approval of Global Positioning System (GPS) Navigation Equipment for Use as a VFR and IFR Supplemental Navigation System.

(8) **FAA Technical Standard Order (TSO) C60,** Airborne Area Navigation Equipment Using Loran C Input.

(9) **TSO C63c**, Airborne Weather and Ground Mapping Pulsed Radars.

(10) **TSO C87,** Airborne Low-Range Radio Altimeter.

(11) **TSO C102,** Airborne Radar Approach and Beacon Systems for Helicopters.

(12) **TSO C-129**, Airborne Supplemental Navigation Equipment Using the Global Positioning System (GPS).

FAA orders, advisory circulars, and technical standard orders in paragraphs 6a(3) through (12) are free and may be obtained from:

U.S. Department of Transportation
TASC, Subsequent Distribution Section, SVC-121.23
Ardmore East Business Center
3341Q 75th Avenue
Landover, MD 20785.
Telephone: (301) 322-4961
FAX: (301) 386-5394
(7:30 a.m. - 4:30 p.m. EST)

b. Other documents:

(1) RTCA Inc. , formerly Radio Technical Commission for Aeronautics (RTCA) DO-172, Minimum Operational Performance Standards for Airborne Radar Approach and Beacon Systems for Helicopters.

(2) RTCA DO-173, Minimum Operational Performance Standards for Airborne Weather and Ground Mapping Pulsed Radars.

(3) RTCA DO-208, Minimum Operational Performance Standards for Airborne Supplemental Navigation Equipment Using Global Positioning System (GPS).

All RTCA documents may be purchased from:

RTCA, Inc.
1140 Connecticut Avenue N.W., Suite 1020
Washington, D.C. 20036
ATTN: Document Sales
Phone: (202) 833-9339
FAX: (202) 833-9434
Internet: HTTP://www.RTCA/org

6. COMMENTS INVITED. Comments regarding this publication should be directed to:

Federal Aviation Administration
ATTN: Flight Procedure Standards Branch, AFS-420
P.O. Box 25082
Oklahoma City, OK 73125

All comments submitted may not be acknowledged; however, they will be considered in the development of future revisions to AC's and other related technical material.

L. Nicholas Lacey
Director, Flight Standards Service

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CHAPTER 1. BACKGROUND AND DEFINITIONS

1-1. BACKGROUND.

a. The criteria for developing offshore approaches is unlike that used for Standard Instrument Approach Procedures. Offshore instrument approach course alignment may vary from one approach to the next. The approach courses depend on the direction and velocity of the wind, and the location of transient obstacles such as barges with cranes, and ships. Airborne weather radar in the mapping mode is used to maintain separation from obstacles. The first instrument procedure approved for helicopters operating under instrument flight rules (IFR) over water was the HEDA's. This procedure allows helicopters to make an IFR en route descent to a radio altitude of 400 feet within a specified area of operation that is clear of obstructions. Upon reaching visual flight rule (VFR), the helicopter proceeds to its destination. HEDA's permit a single instrument procedure to serve multiple offshore landing sites. Helicopter ARA's evolved from HEDA's. This was the first significant effort to establish IFR approach procedures to offshore platforms. Advisory Circular 90-80, Approval of Airborne Radar Approach (ARA) Procedures for Helicopters to Offshore Platforms, dated May 18, 1981, contained an acceptable means for operators to obtain approval of ARA procedures.

b. ARA approaches were usually preferred over HEDA's because the procedure is to a specific location. The ARA's were intended to replace HEDA's. However, HEDA's were retained because they required less time for approval and served larger areas. By the time an ARA is approved, the platform may have been moved to a new location, making the procedure obsolete. It became apparent that a new type approach was needed that incorporated the advantages of both HEDA's and ARA's while providing an acceptable level of safety.

c. In January 1980, the FAA and the National Aeronautics and Space Administration (NASA) conducted a helicopter flight test program in the Gulf of Mexico to evaluate the feasibility of using airborne weather radar in the mapping mode as an approach system for offshore drilling platforms. In September 1984, the FAA conducted further testing in the Gulf of Mexico. In these later tests, airborne weather radar in the mapping mode was evaluated to determine if it was feasible to use radar as a primary device for detecting and avoiding obstructions. The radars that were tested were found acceptable for obstruction detection and avoidance only when the crosswind correction angle did not exceed 10° on final approach. Recommendations from reports of these tests were used to develop guidelines for the OSAP's. OSAP's apply to helicopter operations to and from offshore platforms, rigs, or ships and are not to be used less than 5 nautical miles (NM) from land. Previously, the OSAP had only an offset final. This AC has added the use of global positioning system (GPS) navigation and the Delta 30° OSAP.

d. Helicopter OSAP, ARA, and HEDA procedures to offshore platforms are classified as special procedures. These special procedures are developed for individual operators and issued to the users through operations specifications (OpsSpecs) or letters of authorization (LOA).

1-2. DEFINITIONS. The following definitions apply to OSAP, ARA, and HEDA procedures unless otherwise noted. Acronyms for the definitions are enclosed in parentheses ( ). The abbreviations for procedures are enclosed in brackets [ ] and indicate application only to that type of procedure.

a. Aeronautical Radar Beacon [ARA]. An active transponder that responds to radar interrogations.

b. Airborne Radar Approach (ARA) [ARA]. A nonprecision instrument approach procedure based upon the use of an ARA system as the primary approach aid in the intermediate, final, and missed approach segments.

c. Airborne Radar Approach Systems [ARA]. A weather radar with a mapping mode, cockpit displays, controls, and instrumentation that provide approach guidance using primary radar imaging, beacon return, and/or reflectors.

d. Approach Target [ARA, OSAP]. A stationary platform, rig, or ship used as an alignment point. For an OSAP it is the landing site. For an ARA the approach target may or may not be the landing site.

e. Airborne Radar, Global Positioning System (GPS), or Long Range Navigation C (LORAN C) Approach System [OSAP]. A system comprised of a weather radar with a mapping mode, a GPS or LORAN C navigation receiver, the cockpit displays, controls, and instrumentation necessary to provide approach guidance for an OSAP procedure. The airborne weather radar with a mapping mode will be referred to as airborne radar in the succeeding chapters.

f. Area Calibration [OSAP]. A manual mode of operation requiring pilot input to the LORAN C unit, intended to reduce the effect of propagation anomalies. Application of correction values to the LORAN C system is a function of receiver design.

g. Clear Area [OSAP]. An area centered on the final and missed approach course that provides 0.5 NM lateral obstruction clearance starting at the decision point of the decision point altitude (DPA) and continuing throughout the missed approach.

h. Clear Sector [ARA]. An area overlying and centered on the final approach course. It is 4 NM wide at the final approach point (FAP) and narrows linearly to a 2 NM width at 2 NM from the approach target.

i. Clear Zone [ARA]. A rectangular zone established for a missed approach to the left or right of the final approach course and clear of any obstacle.

j. Cluster Approach [ARA]. An ARA to an offshore landing site located less than 4 NM from any other platform, rig, drill ship, or other plotted obstacle.

k. Course Bearing Cursor [ARA]. An electronically generated course line shown on a radar display to assist pilots in flying a straight line surface track between the FAP and missed approach point (MAP).

l. Course Bearing Selector [ARA]. A pilot-selectable control that positions the cursor on the display.

m. Decision Point Altitude (DPA) [OSAP]. A point located on the offset final or Delta 30° approach course at 500 ft MSL between the FAP and not less than 2 NM from the approach target. At the DPA, if the radar presentation forward along the approach course is clear laterally of all obstructions by at least 0.5 NM, the approach may continue when equipped with an operable radio altimeter to 200 ft above the surface. However, if at the DPA, a lateral separation of 0.5 NM from obstructions is not assured, a missed approach must be initiated.

n. Delta 30° OSAP (Δ 30°) [OSAP]. An approach flown straight-in toward the landing site using GPS or LORAN C for course guidance and airborne weather radar in the mapping mode for detecting and avoiding obstructions. The Δ symbol represents a heading change. At 1.1 NM from the approach target a Delta 30° turn is made to the clear area located to the left or right of course. The Delta 30° course is determined by adding 30° to or subtracting 30° from the inbound heading. The MAP is located no closer than 0.6 NM from the approach target.

o. Final Approach Point (FAP). The position downwind from the approach target where the final approach is initiated.

p. Helicopter En route Descent Area (HEDA) [HEDA]. An instrument procedure that provides an en route descent and transition from IFR to VFR conditions within a specified area of operation. A HEDA is not an instrument approach procedure, and it is not authorized as an alternate destination on an IFR flight plan.

q. HEDA Coordinates [HEDA]. A point in space that is the MAP for the HEDA.

r. Intermediate Approach Fix (IF). The IF may be a VORTAC DME fix or a waypoint based upon an approved area navigation (RNAV) system. The IF connects the en route structure to the intermediate segment of the approach.

s. Minimum Descent Altitude (MDA). The MDA for OSAP, ARA, and HEDA operations is based on either a radio or barometric altimeter. The radio altitude MDA is prefixed by the radio altitude (RA) and the barometric altitude MDA is prefixed by an asterisk.

t. Missed Approach Point (MAP) [OSAP, ARA]. The MAP for an OSAP is a point no closer to the approach target than 0.6 NM for the Delta 30° or 0.7 NM for the parallel offset. The MAP for an ARA is a point no closer to the approach target, as observed on the radar display, than the minimum authorized visibility for landing.

u. Observed Coordinates. Coordinates established by a GPS TSO C129 or LORAN C TSO-C60 (WGS-84 compatible) navigation receiver for a proposed offshore landing site or HEDA location. LORAN-C coordinates are adjusted for area calibration and are normally current for one year. However, other periods of time may be specified in the company OpsSpecs or LOA if geographical consideration and experience indicate that a one-year currency period is not appropriate. Coordinates may also be observed with a GPS receiver equivalent to or better than TSO-C129.

v. Offset Approach [ARA]. An operating technique used when the radar operator at 1 NM from the approach target, provides vectors to position the approach target off the zero azimuth mark by no more than 25 percent of the scan angle being used.

w. Offshore Standard Approach Procedure (OSAP). A procedure designed specifically for helicopters operating at least 5 NM from land. The procedure uses LORAN C or GPS for course guidance and airborne weather radar in the mapping mode for detecting and avoiding obstructions. The OSAP provides the following:

(1) A positive fix for the FAP.

(2) A positive method of maintaining desired track over the surface on the final and missed approach course.

(3) A definite missed approach point.

x. Parallel Offset OSAP [OSAP]. A segment of the OSAP procedure where the final approach segment is offset 0.5 NM either left or right of centerline, depending upon the missed approach clear area.

y. Proceed Visually To The Landing Site [OSAP]. This phrase requires the pilot at or prior to the MAP to acquire and maintain visual contact with the landing site. Obstacle or terrain avoidance from the MAP to the landing site is the responsibility of the pilot. A missed approach procedure is not provided between the MAP and the landing site.

z. Radar Operator. The pilot who operates the radar. The radar operator provides obstacle identification and vector instructions to the pilot at the controls of a helicopter to avoid obstructions during OSAP, ARA, or HEDA procedures. The radar operator may be the pilot-in-command or second-in-command.

aa. Radio Altimeter. An instrument that uses reflected radio signals to determine the height of the helicopter above the surface.

bb. Radio Altitude (RA). The altitude of a helicopter above the surface determined by a radio altimeter.

cc. Remote Altimeter Setting Source (RASS). An altimeter setting source that is more than 5 NM but less than 75 NM from OSAP and ARA landing sites or HEDA coordinates.

dd. Reflector [ARA]. A passive primary radar "skin-paint" source.

ee. Single Landing Site Approach [ARA]. An ARA to an offshore landing site located 4 NM or more from any other landing site, rig, ship, or other obstacle.

CHAPTER 2. OFFSHORE STANDARD APPROACH PROCEDURES

2-1. OSAP SYSTEM COMPONENT REQUIREMENTS. (See appendixes 2 and 3 for sample letters of authorization (LOA) and operations specifications (OpsSpecs)).

a. Before being authorized to conduct OSAP's, each operator who applies must have at least one helicopter equipped with airborne radar approved for OSAP use, an IFR approved GPS or LORAN C navigation receiver, and a radio altimeter.

b. The GPS navigation equipment must meet the minimum requirements of TSO C129 with an external course deviation indicator (CDI) or horizontal situation indicator (HSI) mounted in the pilot's primary instrument scan. FAA Order 8400.10, Air Transportation Operations Inspector's Handbook/Volume 4-Aircraft Equipment and Operational Authorizations/Chapter 1. Air Navigation and Communications, provides guidance for approval of this equipment to be used as sole means for long-range navigation.

c. Airborne Radar. The radar system must meet the following minimum requirements:

(1) Meet either TSO C63 or TSO C102 requirements.

(2) Contain a stabilized 120°/60° sector scanning antenna, with scan rates no less than 12 per minute and 24 per minute respectively.

(3) Contain an adjustable, bright display.

(4) Contain an alphanumeric display for selected ranges and azimuth markers; however, alphanumeric displays of selected ranges are not required when a positive means of determining the range that has been selected is available and the radar operator is appropriately trained.

(5) Contain an indicated range error that does not exceed ± 0.2 NM for display ranges of 5 NM or less.

(6) Contain a lowest selectable range display of 2.5 NM and a range mark display of 0.5 NM increments or smaller.

(7) Contain tilt control of ±15°.

(8) Display a test pattern.

(9) Be operable in the primary mode.

(10) Be equipped with a fault monitor or self-test function.

NOTE: An operational course bearing cursor that provides course guidance may be used to supplement navigation track accuracy.

d. Airborne LORAN C Equipment. The LORAN C must meet the following minimum requirements:

(1) TSO C60.

(2) A suitable CDI or HSI that provides course guidance and is installed in compliance with the provisions of 14 CFR Part 29.1321.

(3) Be capable of solving simple ambiguity.

(4) Have a "navigation valid" indication that is visible to the pilot.

(5) Provide distance and bearing information to waypoints.

(6) Provide visible annunciation to alert the pilot of navigation system abnormalities and course offset operations.

(7) The reference coordinate datum system used for all approaches must be World Georeference System of 1984 (WGS-84) or North American Datum of 1983 (NAD-83).

e. Radio Altimeter. The radio altimeter will meet the requirements of TSO C87.

2-2. AIRWORTHINESS. Equipment required for OSAP's shall be installed and maintained in a manner that meets all applicable airworthiness standards. The selected equipment components must, as a minimum, meet the referenced TSO requirement and be specifically approved for OSAP's by the Flight Standards District Office (FSDO). Equipment not meeting these standards requires further evaluation and approval by FAA engineering before it may be used. Installation of airborne radar, radio altimeter, GPS, and LORAN C equipment may constitute a major change in type design making the provisions of 14 CFR Part 21.97 applicable. Each person who approves a helicopter for return to service after modification for OSAP operations must comply with the provisions of 14 CFR Parts 43.5 and 43.7. System installation requires the following:

a. System controls and data displays must be visible and conveniently accessible to radar operators at their duty stations. The system controls should be protected from inadvertent operation.

b. Electrical power for the system should be obtained from a bus that provides maximum reliability without jeopardizing service to other essential or emergency loads.

c. The OSAP system should not be a source of objectionable electromagnetic interference or be adversely affected by electromagnetic interference from other equipment in the helicopter.

d. Any probable malfunction of the OSAP system should not adversely affect the normal operation of other systems or equipment installed in the helicopter.

e. System performance should not be adversely affected by changes in helicopter attitude, altitude, or main rotor RPM normally encountered in flight operations.

2-3. MAINTENANCE.

a. Airborne radar, radio altimeter, GPS, and LORAN C maintenance shall be performed in accordance with 14 CFR Part 43 and the manufacturer's instructions, or in accordance with a manual under an FAA-approved maintenance program. Records of maintenance should be entered in the helicopter maintenance records required by 14 CFR Part 43.9, or in the records required by the operator's approved maintenance program. Following repair or alteration, the system should be checked by appropriate ground and flight evaluations before predicating any operation on its use. Compatibility of system replacement parts and components should be assured.

b. Each operator's maintenance program must be approved by the FSDO issuing the OSAP authorization before any IFR OSAP operations may be conducted.

2-4. INSPECTION AND TEST PROCEDURES. Operators using OSAP's who do not have an approved maintenance program should establish procedures to inspect and test the OSAP equipment periodically to determine that it is operating as accurately as it was for its original approval. These procedures should include methods for analyzing malfunctions and defects to determine whether established inspections and tests reasonably assure the equipment is maintaining its accuracy. Test and inspection procedures and intervals should be adjusted in accordance with the results of the analysis. In addition to the equipment manufacturer's recommendations, the following test and inspections should be included:

a. A visual inspection to determine condition and security of equipment mounting, electrical wiring and connectors, radome, antennas and cables, wave guide and couplings, indicator mounts, knobs, etc.

b. A functional test of the airborne radar mapping mode, radio altimeter, and GPS or LORAN C to determine operating condition. Tests should be performed in accordance with appropriate manufacturer's procedures.

c. Other appropriate tests and inspections to determine whether the complete system is operating properly.

NOTE: The inspection and test procedures will be approved by the FSDO issuing the OSAP authorization before the operator conducts any IFR OSAP operation in instrument meteorological conditions (IMC).

2-5. APPROVED WEATHER OBSERVATION AND REPORTING REQUIREMENTS. Refer to FAA Order 8400.10, Volume 4, Aircraft Equipment and Operational Authorizations, Chapter 7. Rotorcraft Authorizations and Limitations, Section 1. IFR Offshore Operations, and Title 14 CFR Part 91, Subpart B - Flight Rules/General.

2-6. TRAINING PROGRAM AND FLIGHT CREWMEMBER EXPERIENCE. Before conducting OSAP operations in IMC, each flight crewmember should have:

a. Ten hours of flight crew experience operating IFR (at either crew station) in the offshore route structure.

b. A minimum of ten OSAP's for each type navigation receiver with at least five for each type of procedure and at least four from each crewmember position. This may be reduced by the principal operations inspector (POI) for the operator based on the flight crew experience and proficiency.

c. All training must be a matter of record.

d. After completing OSAP training, each flight crewmember must pass an OSAP flight proficiency check. They may then be authorized to use ceiling and visibility minimums of 300 ft RA and 1 statute mile (SM). Each crewmember must then fly and record ten additional OSAP's for each type of navigation receiver and at least five for each type of procedure before receiving authorization to conduct operations to ceiling and visibility minimums lower than 300 ft RA and 1 SM. The POI may reduce these requirements based on the total crew experience provided the pilot-in-command meets all the conditions of this paragraph. See appendix 4 for sample training program.

e. The OSAP flight proficiency check is an annual requirement.

f. Helicopter flight simulators specifically approved for OSAP training by the National Flight Simulator Evaluation Team and the POI assigned to the operator may be used for any amount of required training.

g. In accordance with Order 8400.10, operators requesting authority to use OSAP's are required to satisfactorily train their flight crewmembers under an FAA-approved training program before beginning OSAP operations. Operators should submit a proposed training program to the Certificate Holding District Office (CHDO) for approval. See appendix 4 for sample training program.

2-7. PROCEDURE DEVELOPMENT CRITERIA. Approach chart examples are in appendix 5, figures 5-1 and 5-2. A certificated air carrier submits a written request with the proposed chart through the CHDO POI to the FSDO having jurisdiction over the area of intended operation. All other operators submit requests directly to the FSDO having jurisdiction over the area of intended operation. The FSDO having jurisdiction forwards the procedure to the regional All Weather Operations (AWO) program manager for approval of the procedure and coordination with air traffic elements. A separate chart for each OSAP is not required. (See appendix 1, Request For Approval of OSAP, ARA, or HEDA Procedures).

a. The procedure is identified as either, "COPTER DELTA 30° OSAP" or "COPTER PARALLEL OFFSET OSAP."

b. En Route construction provides separation of aircraft 6 NM either side of course in the Gulf of Mexico and as small as 4 NM either side of course on airways or routes. The minimum en route altitude (MEA) in offshore airspace and within oceanic airspace is charted on the approach chart. Figure 2-1 shows the plan view and cross sectional view of this criteria in the grid system in the Gulf of Mexico. Sample OSAP charts are in appendix 5, figures 5-1 and 5-2. Chart the following notes in the plan view:

(1) "SPECIAL AUTHORIZATION REQUIRED. WX RADAR IN MAPPING MODE, AND GPS OR LORAN C REQUIRED."

(2) "Maintain MEA until departing the en route fix."

(3) "Select 1 NM CDI sensitivity when departing the en route fix"

c. **The initial and intermediate segment construction** consist of a route segment that extends from an en route fix (grid fix in the Gulf of Mexico) to fly over the approach target with course reversals that extend to the final course. Seven NM arcs are also constructed for optional routing to the final course. A 7 NM fix is charted from the approach target site for direct routing to the final segment. These segments are flown no lower than 900 ft MSL until the FAP inbound to the approach target (see figure 2-2). Chart the following note in the plan view:

"Clear all obstructions by at least 0.5 NM laterally by radar after FAP inbound."

d. **The final segment construction** consists of either the Delta 30° or parallel offset OSAP. These are described in paragraph 2-8d. Figures 2-3 and 2-4 depict the Delta 30° and parallel offset OSAP's. Chart the following notes on the Delta 30° OSAP:

(1) "PROCEED VISUALLY TO THE LANDING SITE."

(2) "Maximum ground speed is 70 knots between FAP and MAP."

(3) "DPA (Not less than 2 NM from approach target)." The DPA altitude shall not be lower than the barometric MDA adjusted for the remote altimeter setting source (RASS). The DPA is charted as follows:

"500 MSL or no lower than barometric MDA adjusted for RASS."

(4) "Δ 30° heading at 1.1 NM from landing site." In addition to paragraphs 2-7b(1), (2), and (3), chart the following notes on the parallel offset:

"0.5 NM offset."

e. **Minimums.** Apply paragraph 2-8d(6) for charting landing, alternate, and departure minimums. Chart the following note when the radio altimeter is not available for an approach: **"Altimeter source more than 5 NM but less than 75 NM, increase MDA 5 ft for each NM beyond 5 NM." (See appendix 5, figures 5-1 and 5-2)**

f. **Departure and Alternate.** Chart the following notes for the departure and the alternate:

(1) "Avoid radar targets by 0.5 NM laterally until reaching 900 ft MSL when making IFR departures."

(2) "Use 800-2 nonprecision alternate minimums or as approved by OpsSpecs."

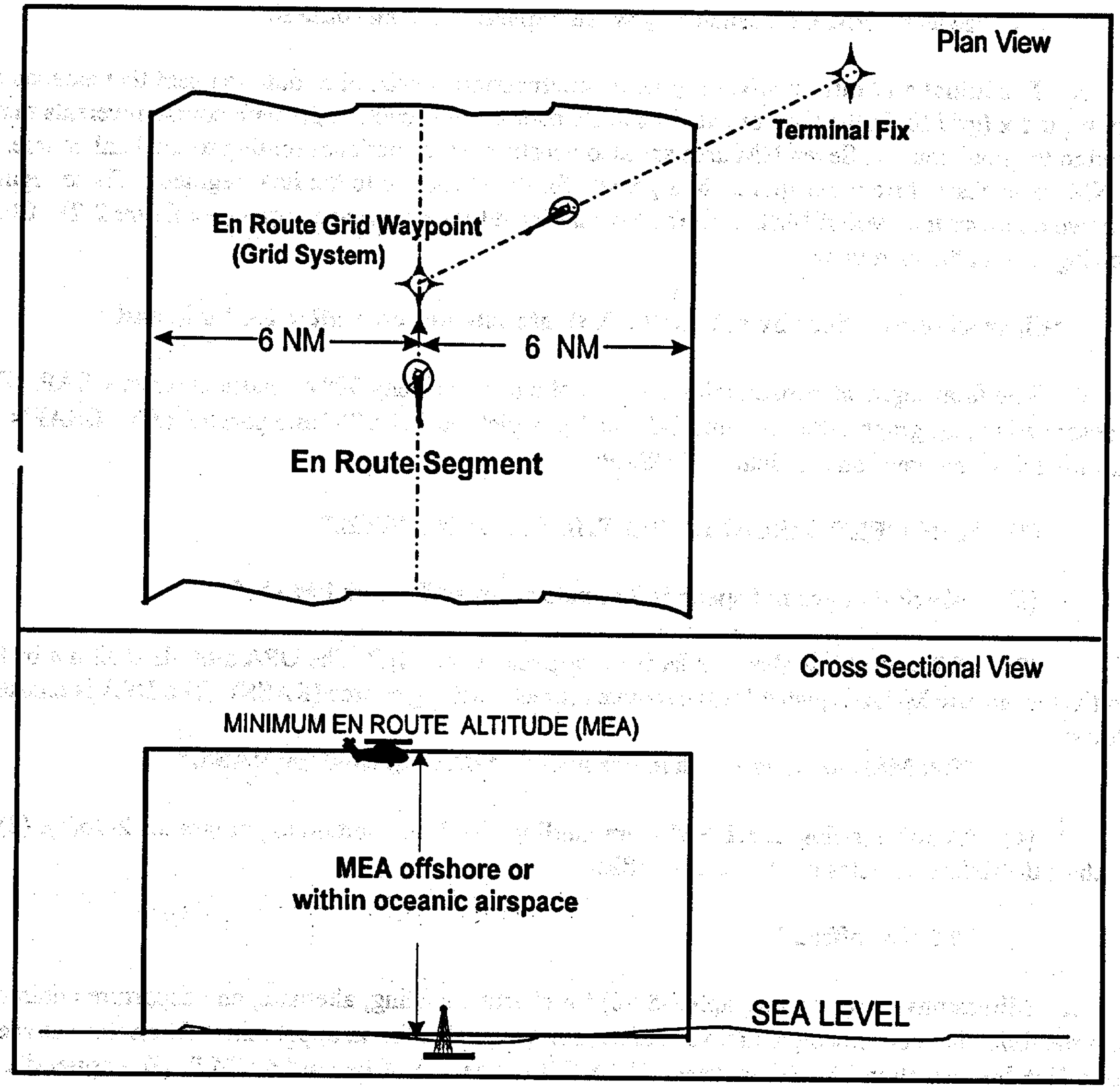


Figure 2-1. EN ROUTE CRITERIA

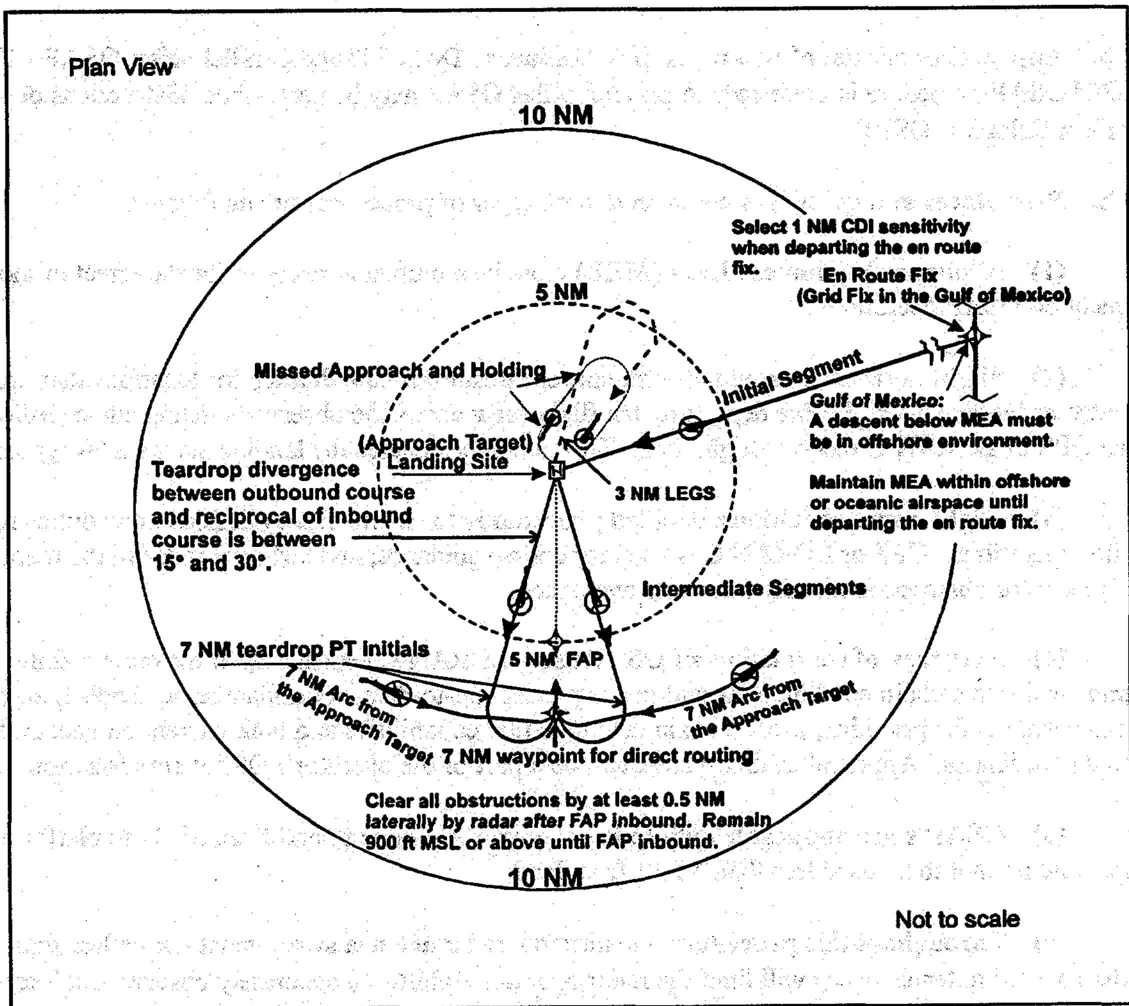


Figure 2-2. OSAP INITIAL, INTERMEDIATE, MISSED APPROACH, AND HOLDING SEGMENTS

g. Missed Approach Construction.

(1) Chart the following missed approach instructions for the Delta 30° OSAP: "Climb to 900 via the Δ 30° heading, then climbing turn to the MEA, direct to the approach target within 10 NM and hold, or as directed by ATC."

(2) Chart the following missed approach instructions for the parallel offset OSAP: "Climb to 900 via the offset course, then climbing turn to the MEA, direct to the approach target within 10 NM and hold, or as directed by ATC."

h. Missed Approach Holding. Chart the following holding instructions: "Hold over the approach target on the inbound course, 3 NM legs, maintain the MEA, or as directed by ATC."

2-8. OPERATIONAL APPLICATIONS.

a. Approaches consist of two types of procedures: Delta 30° and parallel offset OSAP. The Delta 30° OSAP procedure is preferred. A parallel offset OSAP may be used when obstructions do not allow for a Delta 30° OSAP.

b. Procedures and guidelines common to both types of procedures are as follows:

(1) Minimum Equipment Lists (MEL) must be modified to account for the effect of inoperative equipment on OSAP operations.

(2) Flight crews are provided with current observed coordinates for locations that are designated as landing sites. Before departure, the flight crew enters the observed landing site coordinates into the GPS or LORAN C receiver flight plan. This action designates the landing site as a "waypoint."

(3) Flight crews should use detailed procedures to ensure clearly defined crew duties for two-pilot operations. GPS or LORAN C is used for course guidance, and airborne radar in the mapping mode is used for obstruction identification and avoidance.

(4) Accuracy of completing an OSAP using LORAN C depends upon the crew's ability to determine and select chain combinations and to use precise, up-to-date, coordinate data. Each operator develops a system for providing precise chain determination capabilities and both current and accurate observed coordinates. Approval of this system will be a part of the operator's OSAP authorization.

(5) OSAP's are applicable only to helicopter operations to and from offshore platforms, rigs, or ships, and are not to be used less than 5 NM from land.

(6) Throughout this procedure, the airborne radar antenna sweep must not be less than 120°. Less than a 120° antenna sweep will limit the radar operator's ability to accurately observe and locate obstructions. Smaller sweep angles increase the possibility of premature loss of peripheral radar targets.

c. En Route and Intermediate.

(1) Flight from the last fix (or en route grid waypoint in the Gulf of Mexico) on the airway or route segment to the intermediate fix (IF) along a VORTAC or RNAV routing does not require modification to accommodate an individual OSAP. Procedures unique to an OSAP begin at the IF. The IF segment can begin over the approach target or on an arc.

(2) A descent below the MEA is not authorized at any point in the OSAP until the helicopter has departed the last en route fix and is offshore (see figure 2-2).

(3) The route entry into the final segment may be flown with a teardrop 7 NM procedure turn. The procedure turn must remain within 10 NM of the approach target. A 7 NM arc entry to the final segment and a fix established at 7 NM from the approach target on the final course for direct routing to the turn on to the final course are also options (see figure 2-2).

(4) A CDI Sensitivity of 1.0 NM or less is set when departing the last en route fix.

(5) **During all phases of the en route and intermediate segments,** the flight crew monitors the airborne radar and GPS or LORAN C systems to determine reliability and operational correctness.

d. Final approach:

(1) **For radar detection and avoidance of obstructions,** the final approach course is flown into the wind within 10° of the wind direction, and with no more than a 10° crosswind correction angle. This course is flown to the Delta change point for the Delta 30° OSAP and to the MAP for the parallel offset OSAP. After turning to the final course, a descent is made to no lower than 900 ft MSL prior to reaching the FAP. The crew establishes the FAP at not less than 5 NM from the approach target. At the FAP a descent is made to no lower than 500 ft MSL prior to reaching the DPA. The crew establishes the DPA at not less than 2 NM from the approach target. At the DPA, the crew confirms the final approach course is clear laterally of all obstacles by at least 0.5 NM before a descent is made to the MDA. If lateral separation is not assured by 0.5 NM, a missed approach is initiated. For the Delta 30° OSAP, a 30° turn is made at 1.1 NM from the approach target to the clear area either to the left or right of the approach target. The Delta 30° course is determined by adding 30° to or subtracting 30° from the inbound heading (see figure 2-3).

(2) **During the final approach,** if the GPS or LORAN C system and airborne radar display difference exceeds ±0.2 NM in range or azimuth, or the approach target is lost from the airborne radar display for one full sweep, an immediate missed approach must be made.

(3) **The following procedures** are required for the Delta 30° OSAP (see figure 2-3).

(a) The DPA is established after the FAP but not less than 2 NM from the landing site depending on obstacles within 0.5 NM of the final approach course.

(b) The Delta 30° heading is made either to the right or left of the straight-in portion of the inbound course depending on the clear area determined by the radar operator. The Delta 30° heading is maintained until the MAP if visual reference is not established with the landing site.

(c) Between the FAP and the MAP, the maximum ground speed is 70 knots.

(d) While on the Delta 30° heading and prior to the MAP, when visual reference with the landing site is established, the pilot proceeds visually to the landing area. If visual reference with the landing site is not established prior to the MAP and the pilot cannot proceed visually to the landing area, a missed approach is executed (see figure 2-3).

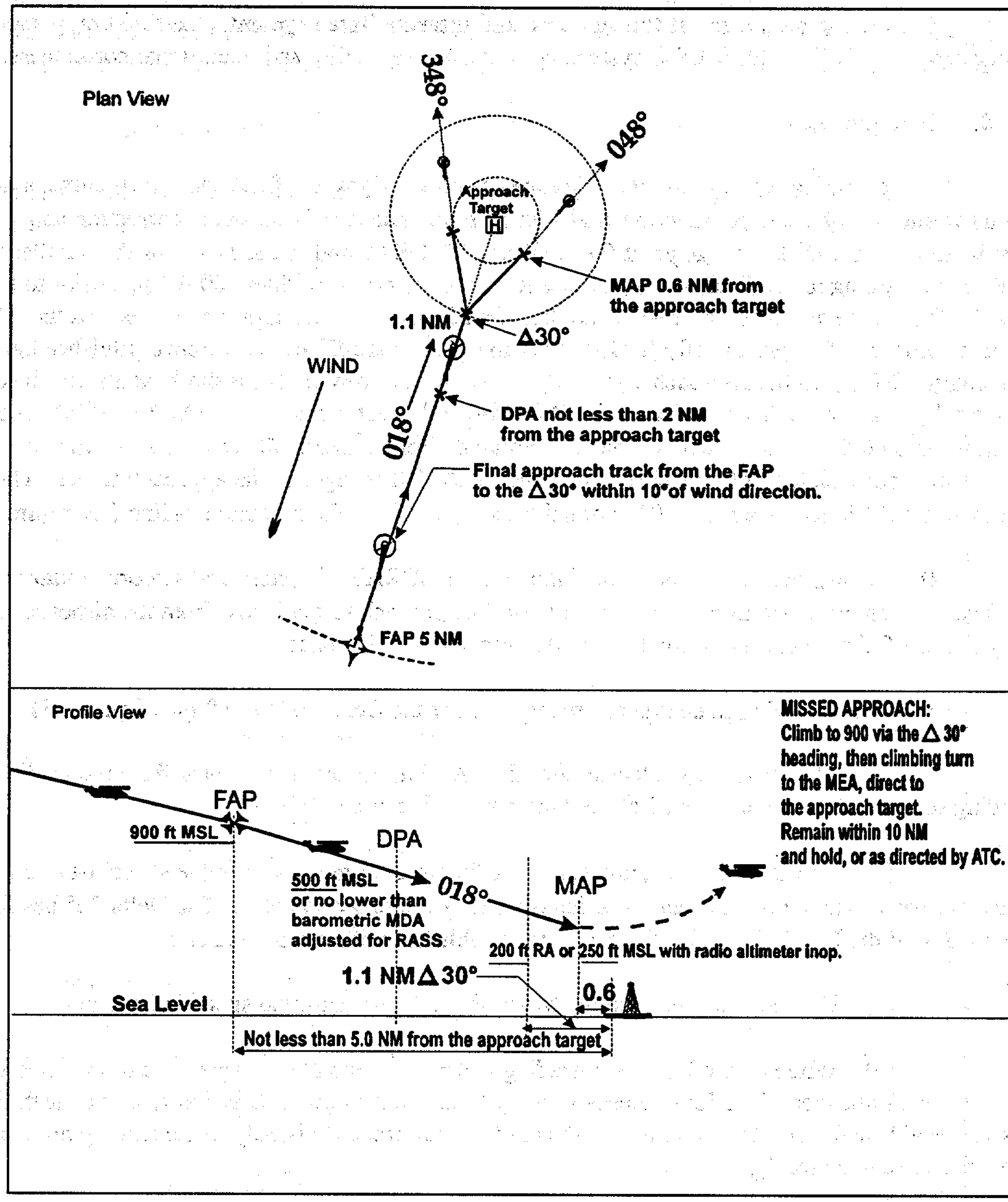


Figure 2-3. DELTA 30° OSAP

(4) The following procedures are required for the parallel offset OSAP (see figure 2-4).

(a) Departing the FAP inbound, either a left or right turn is made to a heading that is established from the FAP on the 0.5 NM parallel offset inbound course.

(b) The direction of turn is selected based on the clear area determined by the radar operator.

(c) The DPA is established after the FAP but not less than 2 NM from the landing site depending on obstacles within 0.5 NM of the offset course. This depends on the radar return of obstacles within the final area. The helicopter must be established on the parallel offset course prior to the DPA.

(d) Between the FAP and the MAP the maximum ground speed is 70 knots.

(e) After passing the DPA, a descent is made to the MDA on the parallel offset course. The parallel offset course is maintained until the MAP or visual reference is made with the landing site.

(f) A turn is made to the landing site after visual reference is established.

(g) If visual reference with the landing site is not established prior to the MAP and the pilot cannot proceed visually to the landing site, a missed approach is executed (see figure 2-4).

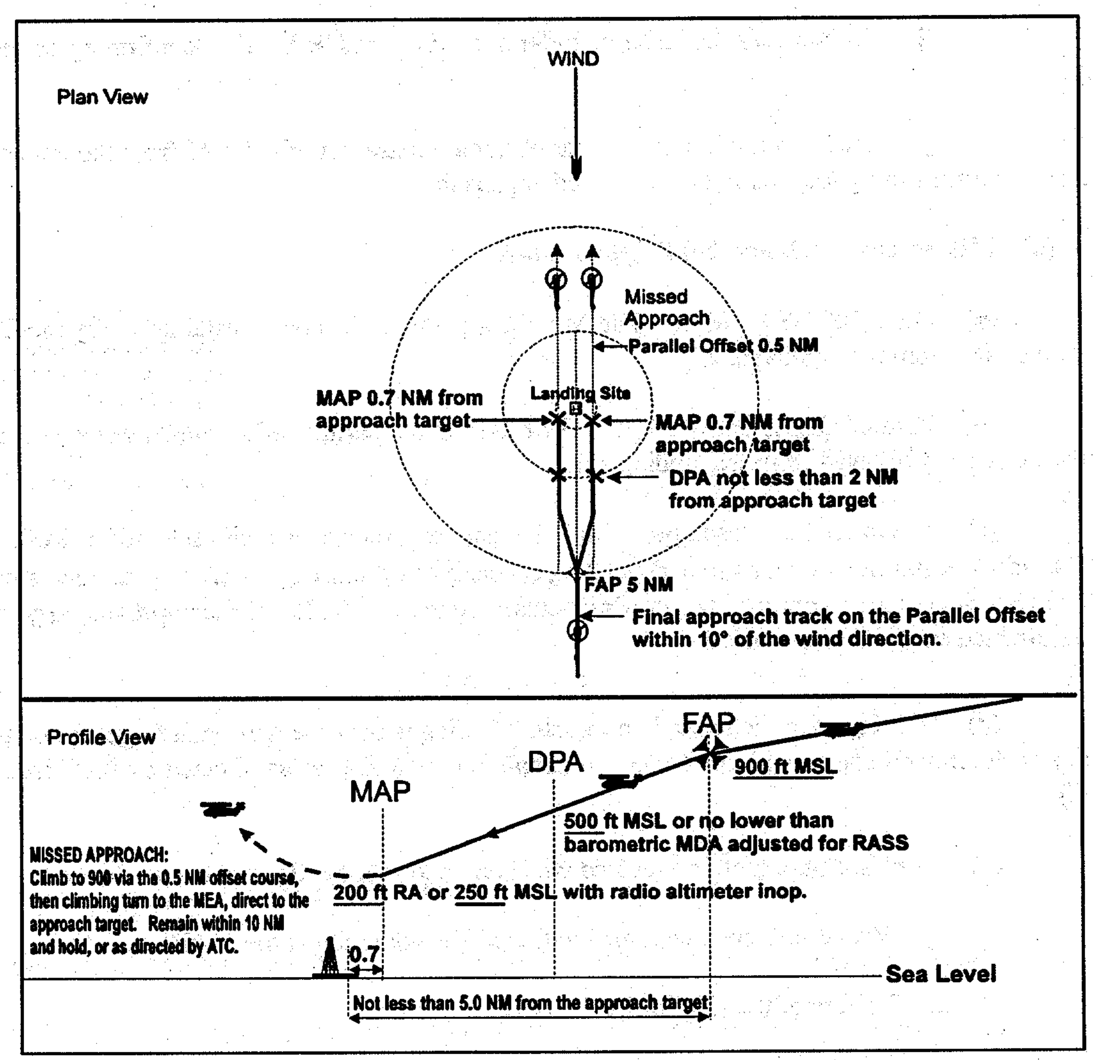


Figure 2-4. PARALLEL OFFSET OSAP

(5) **Procedures and guidelines common to the Delta 30° and parallel offset OSAP's are as follows:**

(a) When using LORAN C to avoid adversely affecting updating capabilities, the pilot should maintain a stabilized airspeed and make small heading changes using well coordinated turns.

(b) Consideration should be given to the location of the helicopter in relation to obstructions in the event of airborne radar failure.

(c) Before beginning descent at the DPA, the radar operator accomplishes the following:

1. Selects the lowest appropriate scale on the airborne radar display to assure maximum radar accuracy.

2. Crosschecks the airborne radar and GPS or LORAN C to confirm agreement and accuracy.

3. Confirms a minimum lateral obstacle separation of 0.5 NM from the intended GPS or LORAN C course throughout the final and missed approach.

(6) Missed approach and holding procedures:

(a) Delta 30° OSAP MAP. The MAP is a point on the course established by the Delta 30° heading at 0.6 NM from the landing site.

(b) Parallel Offset OSAP MAP. The MAP on the parallel offset final approach is a point on the offset course at 0.7 NM from the landing site.

(c) The missed approach procedures for both approaches is a climb to 900 ft MSL via the Delta 30° heading or parallel offset course, depending on the type of approach that is made, then a climbing turn to the MEA direct to the approach target while remaining within 10 NM of the approach target and hold, or as directed by ATC (see figure 2-2).

(d) Holding after the missed approach: Holding is over the approach target fix on the missed approach inbound course with 3 NM legs, maintaining the MEA, or as directed by ATC (see figure 2-2).

(e) A missed approach is executed when any one of the following events occur:

1. Visual reference with the landing site is not made at the MAP.

2. Failure of the GPS or LORAN C.

3. Failure of the airborne radar.

4. The approach target is lost from the airborne radar display for one full sweep.

5. When the radar operator determines the helicopter's track will not avoid all obstacles by at least 0.5 NM.

(f) When within close proximity of the MAP, if visual contact is not established, make only minor heading changes to avoid flight closer than 0.5 NM to any radar returns while following GPS or LORAN C course guidance during a missed approach.

(g) **Lost communication procedure after the missed approach:** Execute the published missed approach procedure and then proceed direct to the alternate at the MEA.

(7) **Minimums:**

(a) **Takeoff Minimums:**

1. The standard takeoff visibility for offshore landing sites is 1/2 SM.

2. When departing an offshore landing site, avoid all obstructions by at least 0.5 NM when below 900 ft MSL.

3. For departures from platforms that have no approved procedure, maintain VFR until able to climb through an obstacle clear area to the MEA.

(b) **Landing Minimums:**

1. RA 200 & 3/4 SM visibility.

2. 250 MSL & 3/4 SM visibility.

3. **Requirements for charting the MDA:**

- 200 ft RA: Radio altimeter must be operative.

- 250 ft MSL: Barometric altitude for use when radio altimeter is not available. When the barometric altimeter setting is received from a source that is more than 5 NM from the landing site, increase the MDA by 5 ft for each mile in excess of 5 NM. The maximum distance for a remote altimeter setting source from a landing site is 75 NM.

(c) **Alternate Minimums and Requirements:** Standard alternate minimums of 800 ft ceiling and 2 SM visibility for nonprecision approaches apply for OSAP's to be used as an alternate. Requirements to establish an alternate are listed below:

1. Approved source of weather observations and reports.

2. Two-way communications with aircraft making an approach.

3. Any required onshore alternate requires a standard or special instrument approach procedure other than GPS or LORAN C that is anticipated to be operational at the estimated time of arrival.

CHAPTER 3. AIRBORNE RADAR APPROACHES

3-1. ARA SYSTEM COMPONENT REQUIREMENTS. (See appendixes 2 and 3 for sample LOA's and OpsSpecs). This section applies to helicopter ARA procedures for offshore landing sites conducted under IFR. The procedures criteria in this AC apply to airborne weather radar with mapping mode that has a demonstrated navigational capability acceptable to the Administrator for ARA procedures. The airborne weather radar systems that have proved suitable for use as primary instrument approach aids are short-range pulse radars, manufactured and approved for the purpose of weather avoidance rather than navigation. Minimum system components for procedures based on airborne radar only (with or without beacon capability) are as follows:

a. Airborne Radar. Radar system minimum requirements:

(1) Stabilized 120°/ 60° sector scanning antenna with scan rates of no less than 12 per minute and 24 per minute respectively.

(2) Adjustable light display.

(3) Alphanumeric display for selected ranges and azimuth markers; however, alphanumeric display for selected ranges is not required when:

(a) A positive means for determining selected scale is available, and

(b) The radar operator is appropriately trained.

(4) The indicated range error should not exceed ± 0.2 NM for display ranges of 5 NM or less.

(5) The lowest selectable range display should be at least 2.5 NM with a range mark display of 0.5 NM to meet the authorized landing minimums. Equipment that provides a lowest range display of 5 NM with a range mark display of 1 NM may be used, but a 1/4 NM penalty is imposed on established visibility minimums.

(6) Tilt control ± 15°.

(7) Test pattern.

(8) Primary mode (beacon mode may be necessary for cluster approach).

(9) Fault monitor or self-test.

(10) An operational course bearing cursor that provides course guidance is required to fly cluster approaches below obstacles.

(11) With zero pitch and roll signals applied to the antenna scanner representing level flight attitude, the indicator update strobe line should indicate the antenna beam center to within ± 3° at any scan angle.

NOTE: A radio altimeter must be installed and operational before descent to the RA MDA is authorized.

b. Radio Altimeter. The radio altimeter must meet the requirements of TSO C87.

c. Offshore Heliport Facilities.

When required to ensure positive identification of targets, a radar transponder beacon should be evaluated during the approval process.

3-2. AIRWORTHINESS. As a minimum, ARA systems shall meet the airworthiness requirements of TSO C63 or C102. Installation of an ARA system for IFR use is a major change in type design, and the provisions of 14 CFR Parts 21.97, 43.5, and 43.7 apply. System installation requirements are:

a. System controls and data displays must be conveniently accessible and visible to radar operators at their duty stations. The system controls should be protected against inadvertent operation.

b. Electrical power for the system should be obtained from a bus that provides maximum reliability for electrical power without jeopardizing other essential or emergency loads.

c. The ARA system should not be a source of objectionable electromagnetic interference and shall not be adversely affected by electromagnetic interference from other helicopter equipment.

d. Any probable malfunction of the ARA system should not adversely affect the normal operation of other systems or equipment installed in the helicopter.

e. System performance should not be adversely affected by helicopter attitude, altitude, or main rotor RPM normally encountered in flight operations.

3-3. MAINTENANCE.

a. Airborne weather radar and radio altimeter maintenance shall be performed in accordance with 14 CFR Part 43 and the manufacturer's instructions or in accordance with a manual under an FAA-approved maintenance program. Records of maintenance should be entered in the helicopter maintenance records required by 14 CFR Part 43.9 or in the records required by the operator's approved maintenance program. Following repair or alteration, the system should be checked by appropriate ground and flight evaluations before predicating any operation on its use. Compatibility of replacement parts and components should be assured. Ground-based radar beacon or reflector maintenance will be performed in accordance with the manufacturer's instructions and must be under an FAA-approved maintenance program.

b. Each operator's maintenance program must be approved by the FSDO issuing the ARA authorization before any ARA operations in instrument IMC may be conducted.

3-4. INSPECTION AND TEST PROCEDURES. IFR ARA systems that are not under an FAA-approved maintenance program should be maintained under inspection and test procedures that ensure the equipment continues to be capable of navigation with at least the degree of accuracy required for original approval. These procedures should include methods for analyzing malfunctions and defects to determine that established inspections and tests reasonably assure maintenance of equipment accuracy. Procedures and intervals for tests and inspections should be adjusted in accordance with results of the analysis. In addition to the equipment manufacturer's recommendations, the following test and inspections should be included:

a. A visual inspection to determine condition and security of equipment mounting, electrical wiring and connectors, radome, antennas and cables, wave guide and couplings, indicator mounts, knobs, etc.

b. A functional test of the airborne weather radar mapping mode and radio altimeter to determine operating conditions. Tests should be performed in accordance with appropriate manufacturer's procedures.

c. Other appropriate tests and inspections to determine whether the complete system is operating properly.

3-5. APPROVED WEATHER OBSERVATION AND REPORTING REQUIREMENTS. Refer to FAA Order 8400.10, Volume 4, Aircraft Equipment and Operational Authorizations, Chapter 7. Rotorcraft Authorizations and Limitations, Section 1. IFR Offshore Operations, and Title 14 CFR Part 91, Subpart B - Flight Rules/General.

3-6. TRAINING PROGRAM AND FLIGHT CREWMEMBER EXPERIENCE. Before conducting ARA operations in IMC, each flight crewmember should have:

a. Ten hours of flight crew experience operating IFR (at either crew station) in the offshore route structure.

b. A minimum of ten ARA's and at least four from each crewmember position. This may be reduced by the POI for the certificate holder based on the flight crew experience and proficiency.

c. All training must be a matter of record.

d. After completing ARA training, each flight crewmember must pass an ARA flight proficiency check. They may then be authorized to use the ARA to 100 ft above the lowest established ceiling minimums and 1/2 SM above the lowest established visibility minimums. Each crewmember must then fly and record ten additional ARA's before receiving authorization to conduct operations to the lowest established ceiling and visibility minimums required by the operator. The POI may reduce these requirements based on total crew experience provided the pilot-in-command meets all the conditions of this paragraph.

e. The flight proficiency check is an annual requirement.

f. Helicopter flight simulators specifically approved for ARA training by the National Flight Simulator Evaluation Team and the POI assigned to the operator may be used for any amount of required training.

g. Operators requesting authority to use ARA's are required to satisfactorily train their flight crewmembers under an FAA-approved training program before beginning ARA operations. Operators should submit a proposed training program to the CHDO for approval. (See appendix 4 for sample training program.)

3-7. PROCEDURE DEVELOPMENT CRITERIA. Approach chart examples are in appendix 5, figures 5-3 and 5-4. A certificated air carrier submits a written request with the proposed chart through the CHDO POI to the FSDO having jurisdiction over the area of intended operation. All other operators submit requests directly to the FSDO having jurisdiction over the area of intended operation. The FSDO having jurisdiction forwards the procedure to the regional AWO program manager for approval of the procedure and coordination with air traffic elements and the regional Flight Procedures Office (FPO). Coordination with the FPO is required when expenses are incurred by the FAA for the development and/or flight check of a procedure. (See appendix 1, Request For Approval of OSAP, ARA, or HEDA Procedures.) The following note is charted in the plan view of the procedure:

"SPECIAL AUTHORIZATION REQUIRED.
WX RADAR IN MAPPING MODE REQUIRED."

a. **Procedure Identification.** The procedure is identified as **"Copter ARA"** with the name of the cluster or rig, e.g. **"WINTR 120."** If the procedure requires beacon capability, the procedure will be annotated **"Beacon Required."** A note specifying the platform containing the beacon is printed on the plan view of the chart, e.g. **"Beacon on Platform 1."** (See appendix 5, figure 5-4.)

b. **Procedure Construction.** For ARA procedures, obstructions 50 ft or higher above the surface are considered obstacles. Where landing sites or approach targets are less than 100 ft above the surface, all obstacles within 50 ft of the site's height shall be charted. An ARA procedure to an offshore site has two areas, the intermediate area and the final approach area. Missed approach airspace is contained within the two areas (see figures 2-4 and 3-1). Determine whether the procedure is for a single landing site or for a cluster of landing sites. Identify the final approach area. Connect it to the en route structure by an overlying intermediate area that is used for transition. The procedure shall also contain the land side navigation facility, the route designation, and the location of the destination site or landing site cluster. For en route construction, apply paragraph 2-7a of this AC. The ARA chart contains a table to determine the time required to fly an outbound 4 NM leg for a teardrop procedure turn. The intermediate and final segment construction is described in paragraph 3-7c. Sample ARA approach charts are contained in appendix 5, figures 5-3 and 5-4.

c. **Single Approach Target Procedure Construction.** This procedure provides for an into-the-wind final descent to the landing site from any direction, depending on the surface wind reported in the approach target area and the operating procedures selected by the flight crew (see figure 3-1).

(1) The IF is located on the en route course centerline not less than 10 NM or more than 20 NM from the approach target.

(2) The required obstacle clearance (ROC) for the intermediate approach area is 500 ft above the highest known obstacle in the intermediate approach area until arrival at the FAP inbound. The lowest charted minimum altitude is 600 ft MSL and is charted as follows:

"600 ft MSL or no lower than the barometric MDA adjusted for RASS."

This note is required to assure that the FAP altitude is no lower than the MDA adjusted for the RASS.

(3) **The intermediate approach area is centered on a straight course between the IF and the approach target. The intermediate approach area is bounded by an arc having a 7 NM radius centered on the approach target. Straight lines drawn tangent to the arc extend the area to the en route boundaries at the IF. The intermediate approach area overlies and includes the entire final approach area.**

(4) **Final Approach Area.** The final approach area is the area contained within a circle with a 4 NM radius centered on the approach target.

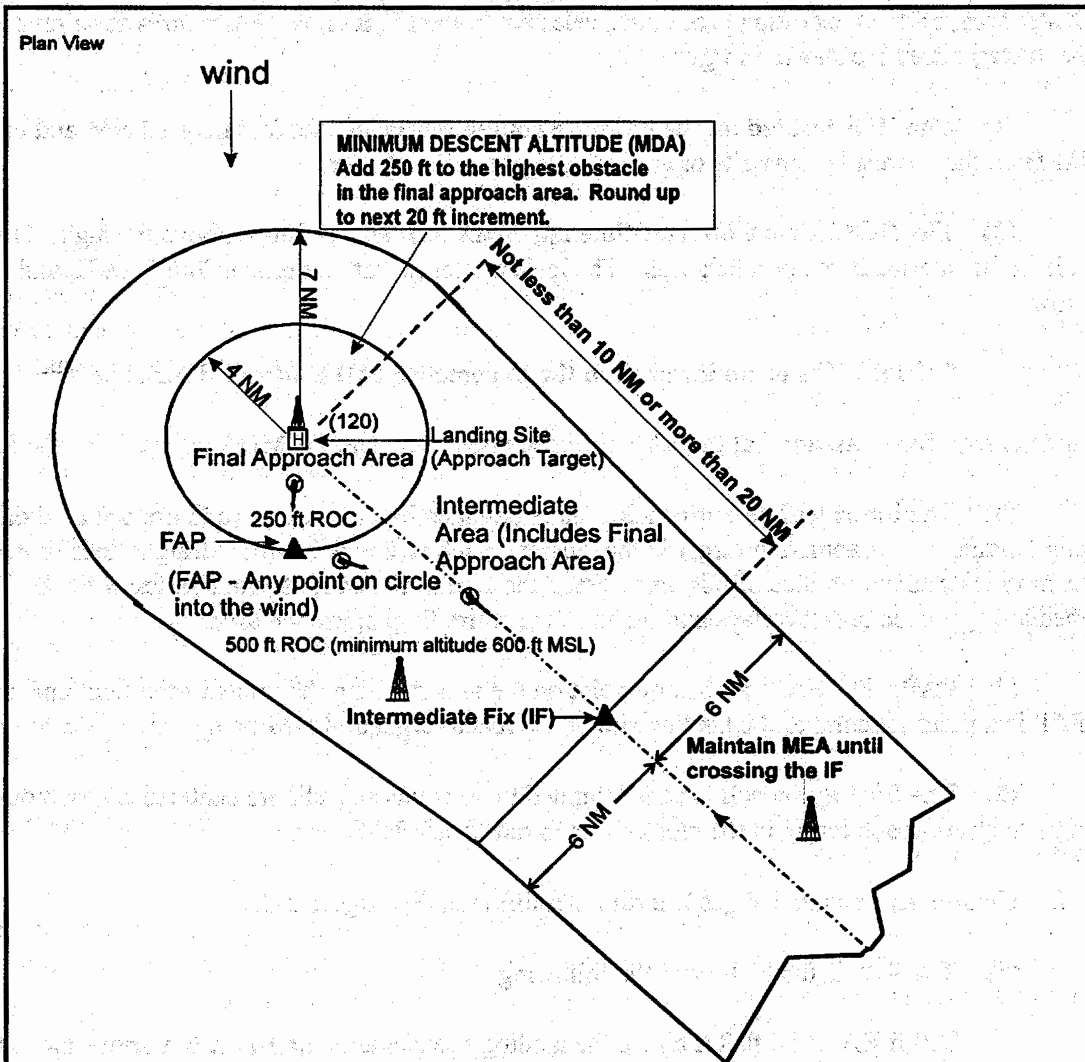


Figure 3-1. SINGLE APPROACH TARGET AREA

d. Single Approach Target Landing Minimums:

(1) The RA is the higher of:

RA 200 ft or 50 ft above the landing site.

The RA MDA visibility is 3/4 SM.

(2) **The barometric MDA minimums are computed by adding 250 ft to the highest obstacle in the final approach area and this value is rounded up to the next 20 ft increment.** In figure 3-1, the highest obstacle in the final approach area is a 120 ft oil derrick. A ROC of 250 ft is added to the MSL height of this derrick. The MDA is rounded up to 380 ft MSL. An adjustment is made for the RASS when the source is more than 5 NM from the landing site. **The barometric MDA visibility is 1/ 2 SM.**

e. Cluster Approach Target Procedure Construction. The procedure provides for an into-the-wind final descent to the cluster area from any direction, depending on the surface wind reported in the cluster area, and the operating procedures selected by the flight crew. Procedures for a cluster approach target area are shown in figure 3-2.

(1) **The IF is located on the en route course centerline** not less than 10 NM and/or more than 20 NM from the nearest landing site or approach target in the cluster.

(2) **The ROC for the intermediate approach segment** is 500 ft above the highest known obstacle in the intermediate approach area. The lowest intermediate altitude is 700 ft MSL and is charted as follows:

"700 ft MSL or no lower than the barometric MDA adjusted for RASS."

This note is required to assure that the FAP altitude is no lower than the MDA adjusted for the RASS.

(3) **The intermediate approach area** is bounded by arcs whose radii are centered on each outlying landing site or approach target in the cluster. Each radius is 7 NM. Straight lines drawn tangent to arcs at the lateral extremities of this area extend the area to the en route boundaries at the IF. The intermediate approach area overlays and includes the entire final approach area.

(4) **FAP.** The FAP can be any point on the arcs defining the limits of the final approach area. The FAP is a point inbound to the landing site or approach target at 4 NM on the radar display.

(5) **The final approach area** is bounded by arcs whose radii are centered on each outlying landing site or approach target in the cluster. Each radius is 4 NM.

f. Cluster Approach Target Landing Minimums. See figure 3-2.

(1) **The RA** is the highest of the following:

200 ft RA or 50 ft RA above the landing site elevation or 100 ft RA above the highest obstruction located within a cluster if a course bearing cursor is not used.

The RA MDA visibility minimum is 3/4 SM.

(2) **The barometric MDA** minimums are computed by adding a ROC of 250 ft to the highest obstacle in the final approach area and this is rounded up to the next 20 ft increment. In figure 3-2, the highest obstacle in the final approach area is a 166 ft oil derrick. A ROC of 250 ft is added to this value. The MDA is rounded up to 420 ft MSL.

***The barometric MDA visibility is 1/2 SM or 3/4 SM.**

*(a) If the lowest descent altitude is above obstructions, the lowest visibility is 1/2 SM.

*(b) If the lowest descent altitude is below obstructions, the lowest visibility is 3/4 SM.

After visual reference with the landing site or approach target is established, the pilot proceeds visually to the landing site. Chart the following note:

"PROCEED VISUALLY TO THE LANDING SITE."

Chart the following note for a remote altimeter setting source for the single and cluster approach target procedures using barometric MDA's:

"Altimeter source more than 5 NM but less than 75 NM, increase MDA 5 ft for each mile over 5 NM from approach target."

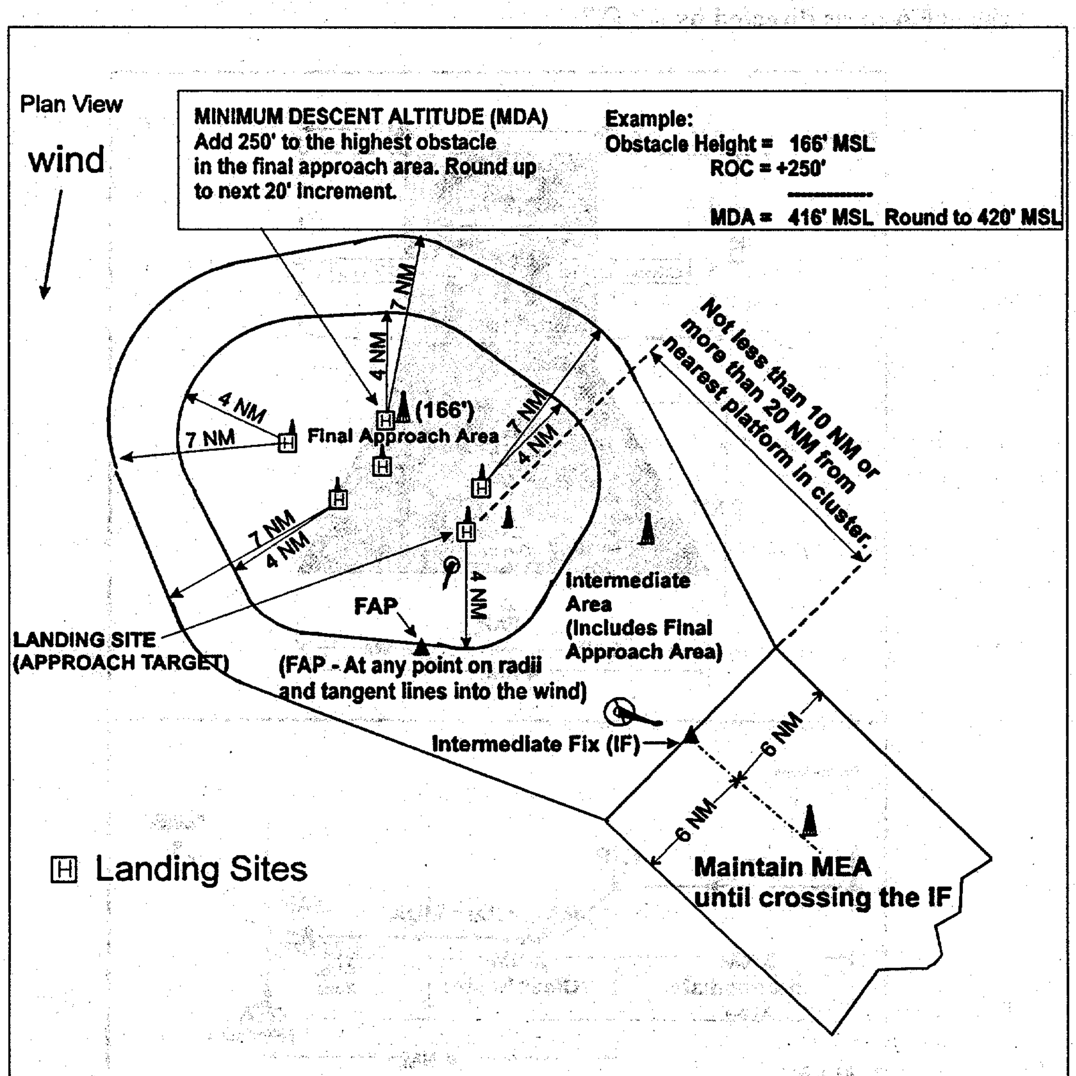


Figure 3-2. CLUSTER APPROACH TARGET AREA

g. **Missed Approach Segment.** The missed approach procedure is constructed for the single and cluster approaches in the same way. The missed approach begins at the MAP and ends at an appropriate point or fix where intermediate approach or en route obstacle clearance is provided.

(1) **MAP.** The MAP is no closer to the approach target than the minimum authorized visibility for landing, as observed on the radar display.

(2) **Missed Approach Area.** The missed approach area is the clear zone left or right of the final approach course, 1.5 NM long and 2.0 NM wide (see figure 3-3).

(3) **Chart the following missed approach: "Climbing turn into the clear zone, then climbing turn to the MEA direct to the IF, or as directed by ATC."**

h. **Missed Approach Holding.** Chart the following holding instructions:

"Hold over the intermediate fix on the inbound course, 1 minute legs, maintain the MEA or as directed by ATC."

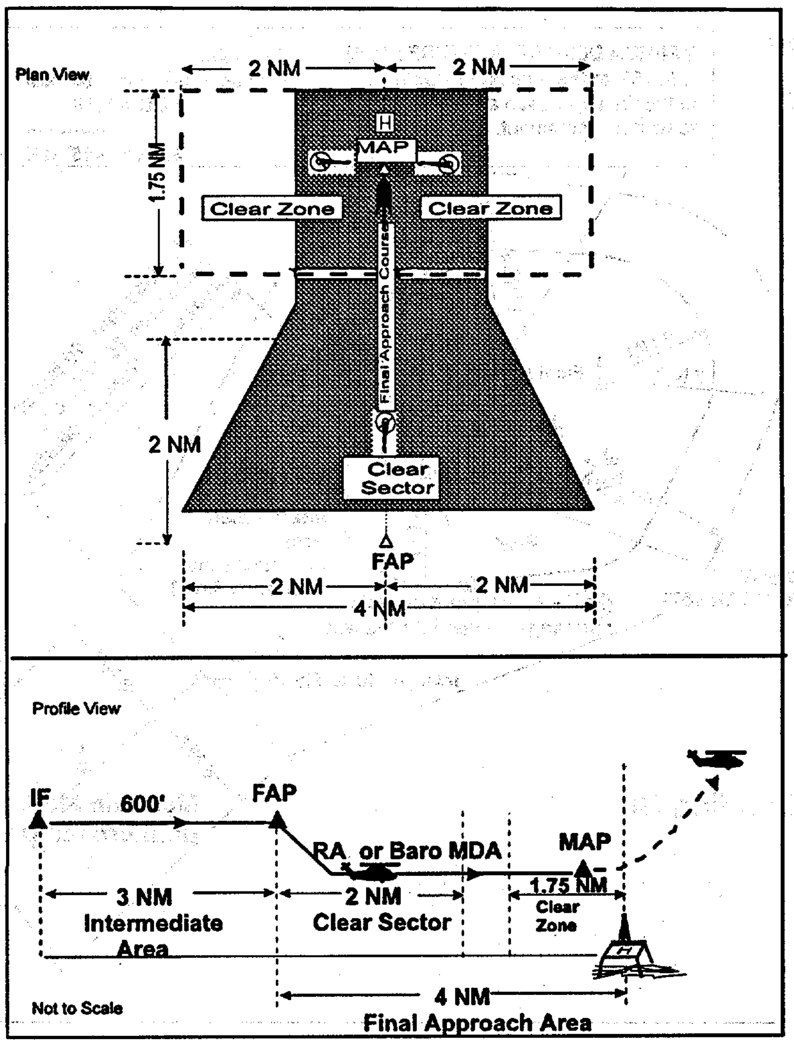


Figure 3-3. CLEAR ZONE AND CLEAR SECTOR

3-8. OPERATIONAL APPLICATIONS.

a. Course Guidance. The radar operator interprets radar returns on the cockpit display and vectors the helicopter clear of observed targets to the MAP. The nature of offshore operations is such that numerous permanent or transient targets may be displayed on radar. For ARA procedures, obstructions 50 ft or higher above the surface are considered obstacles. Where landing sites are less than 100 ft above the surface, all obstacles within 50 ft of the landing site's height are charted. Those obstacles depicted within the final approach area on the ARA approach chart will include known height; however, those objects not shown on the chart must be considered moving obstacles of unknown height that radar provides means of lateral rather than vertical clearance on final approach. Before final approach, vertical clearance over surface obstacles is assured by adherence to specified minimum altitudes. Missed approach obstacle avoidance is provided by an IMMEDIATE climbing turn to a clear zone.

b. Planning. Operational experience has shown that an ARA procedure to a single landing site is a relatively uncomplicated operation. However, operations to and from a landing site cluster increase potential for operator error. This potential can be reduced by careful evaluation of the procedure during the approval process, adequate training by the operator, proper approach planning, and use of aids such as a course bearing cursor to supplement basic airborne radar.

(1) Target Identification. Prompt and positive identification of the landing site solely by the use of mapping mode can be difficult when returns from moving targets confuse the pattern of the targets depicted in a cluster area. Where identification of a cluster cannot be assured in the mapping mode and approved air navigation facilities (NAVAID's) are unavailable to resolve target ambiguity, the approving authority should, as an option, consider whether to require installation of a radar beacon.

(2) Approach Planning. To assure obstacle-free flightpaths on final and missed approach, it is necessary to thoroughly scan and evaluate these areas before the approach is initiated.

(3) Overshooting the MAP. Range errors caused by the time required for target update, possible equipment malfunctions, equipment accuracy, and crew reaction time may cause the MAP to be closer to the landing site than the desired MAP. While turning during the missed approach, airborne radar cannot be relied upon to provide lateral obstacle avoidance. It is, therefore, imperative that crews be trained to execute an immediate climbing turn toward a clear zone at the MAP. To ensure obstacle clearance, it is necessary to initiate the missed approach at the designated MAP. Otherwise the flightpath could transgress an area that does not provide missed approach obstacle clearance.

(4) Use of Course Bearing Cursor. A final approach flown by maintaining the approach target on the course bearing cursor increases the probability that the helicopter will be on the final approach course upon arrival at the designated MAP.

c. Flexibility. An offshore ARA requires procedural flexibility to provide options for the crew in planning the approach. The procedure must provide a transition from an en route fix to a downwind position before beginning the final approach. This requires a provision in the procedure for selection of a FAP that accounts for variations in wind conditions. On a cluster approach, where the close proximity of other targets does not permit sufficient lateral clearance for an ARA directly to the landing site, the approach can be made to a more suitable approach target located on the perimeter of the cluster and proceed visually to the landing site. Selection of an approach target depends upon existing wind conditions that in turn determine the location of the FAP, landing site selection, and missed approach clear zone. An approved ARA procedure will provide an into-the-wind final descent to a cluster perimeter or to a single landing site from any direction.

d. System Limitations and Procedural Consideration.

(1) Blind Flightpath Segments.

(a) If the FAP is not established directly downwind and the approach course is not directly upwind, a homing approach will result. A homing approach can result in blind flightpath segments. This means that, with wind speeds as low as one-third of the airspeed, segments of the flightpath may not be visible to the radar operator when using a 40° sweep angle. When using a 120° sweep angle, a wind speed of 0.9 of the airspeed may cause blind flightpath segments. Homing approaches can occur whenever the wind speed to airspeed ratio is greater than or equal to: $\sin\left(\frac{\text{sweep angle}}{2}\right)$.

(b) In a no-wind condition, a target return 1.0 NM to the left or right of the 0° azimuth mark will disappear from the radar display at the following ranges as the distance to the target decreases:

Sweep Angle	Range
120°	0.58 NM
80°	1.19 NM
60°	1.73 NM
40°	2.75 NM

(c) When a wind causes a 10° crab, or in a 10° offset approach, a target 1.0 NM to the side of the 0° azimuth mark away from the crab or offset will disappear at the following ranges:

Sweep Angle	Range
120°	0.84 NM
80°	1.73 NM
60°	2.75 NM
40°	5.67 NM

(d) Considering that radar is used to avoid obstacles laterally, the importance of establishing an accurate FAP should be apparent.

(e) Missed Approach Area. The clear zone in figure 3-3 is designed to protect the missed approach. The dimensions of this figure are based on a helicopter being on track at the MAP with a ground speed of 70 knots and a climb gradient of no less than 304 ft per NM (355 ft per minute).

e. Operators using airborne radar for offshore instrument flight should develop detailed operational procedures to ensure clearly defined flight crewmember duties for a two-pilot operation. Confusion or misunderstanding with respect to responsibility and authority during an airborne radar operation can be detrimental to safety. The following operating procedures were found both safe and usable during procedural development testing by NASA and the FAA.

(1) En Route. Offshore en route navigational guidance may be based upon any approved system appropriate to the route flown. The last en route fix is also the intermediate approach fix and is based on en route facilities. The radar operator obtains weather information and other relevant data for the landing area, identifies the destination area approach target and landing site, determines the FAP and missed approach clear zone, and discusses the approach with the other pilot before arrival at the intermediate approach fix.

(2) **Approach.** The radar operator vectors the helicopter from the intermediate approach fix to a position downwind from the landing site and provides all further vectors to the MAP. The pilot makes no heading changes except to those vectors specified by the radar operator. At the FAP, the crew confirms the final approach course is clear of all obstacles by at least 1 NM before a descent is made to the RA MDA. Descent on final approach may not begin until the radar operator confirms that all of the following conditions exist:

(a) All equipment required for the approach is operating properly.

(b) The final approach track does not overlay any obstacles other than the approach target, and when descending to the RA, the clear sector is clear of all obstacles.

(c) The missed approach clear zone is free of obstacles.

f. **Missed Approach and Holding.** A missed approach is a climbing turn into the clear zone (figure 3-3) then a climbing turn to the MEA direct to the intermediate fix or as directed by ATC. Holding is on the IF on the inbound course with one-minute legs or as directed by ATC.

g. A missed approach will be initiated immediately if:

(1) **A flight crewmember** has not established visual contact with the approach target at the authorized minimum visibility distance as shown on the radar display; or

(2) **During final approach,** if there is any malfunction of equipment required for the approach, unless the helicopter is in VFR conditions and can continue to the landing site in VFR conditions; or

(3) **The approach target** is lost during any single radar scan when the helicopter is within 2.5 NM of the target; or

(4) **Visual reference** is lost while maneuvering to the landing site.

h. Lost communication procedure after the missed approach: Execute the published missed approach procedure and then proceed direct to the alternate at the MEA.

i. **Takeoff Minimums:**

(1) The standard takeoff visibility for offshore landing sites is 1/2 SM.

(2) When departing an offshore landing site, avoid all obstructions by at least 0.5 NM when below 900 ft MSL.

j. **Landing Minimums:** Landing minimums shall be specified as a barometric MDA based on vertical obstacle clearance or an RA specified for use by operators with an operative radio altimeter and a course bearing cursor for approaches to a cluster area. The altitude that descent is authorized depends on the following conditions:

(1) All required equipment must be operational before descent to the RA MDA.

(2) Descent below the barometric MDA is not authorized if:

(a) Lateral clearance of 1.0 NM cannot be maintained.

(b) Required offshore heliport facilities are not operational.

(c) A required radio altimeter is inoperative.

(3) RA MDA. The RA is the lowest altitude that a descent is authorized in procedures using airborne radar in the mapping mode, an operational radio altimeter, and for cluster approaches, a course bearing cursor. It is the highest of the following:

200 ft RA, or 50 ft RA above the landing site elevation, or 100 ft RA above the highest obstruction located within a cluster if a course bearing cursor is not used.

The RA MDA visibility is 3/4 SM.

(4) Barometric MDA. The barometric MDA is the lowest altitude that descent is authorized when 1.0 NM lateral obstacle clearance is not maintained, the offshore heliport facilities are not available, or the radio altimeter is not operative. The minimum barometric MDA is increased 5 ft for each NM over 5 NM from the altimeter setting source to the landing site. The maximum distance for a remote altimeter setting source from a landing site is 75 NM.

The barometric MDA visibility is 1/2 SM.

k. Alternate Minimums and Requirements. Standard alternate minimums of 800 ft ceiling and 2 SM visibility for nonprecision approaches apply for ARA's to be used as an alternate. Requirements to establish an airport or landing site as an alternate are listed below:

(1) Approved source of weather observations and reports.

(2) Two-way communications with aircraft making an approach.

(3) Any required onshore alternate requires a standard or special instrument approach procedure other than GPS or LORAN C that is anticipated to be operational at the estimated time of arrival.

CHAPTER 4. HELICOPTER EN ROUTE DESCENT AREAS

4-1. HEDA SYSTEM COMPONENT REQUIREMENTS. The system component requirements stated in paragraph 2-1 of this AC apply.

4-2. AIRWORTHINESS. Airworthiness as stated in paragraph 2-2 of this AC applies.

4-3. MAINTENANCE. Maintenance as stated in paragraph 2-3 of this AC applies.

4-4. INSPECTION AND TEST PROCEDURES. Inspection and test procedures as stated in paragraph 2-4 of this AC apply.

4-5. WEATHER REPORTING AND PREFLIGHT ACTION REQUIREMENTS. FAA Order 8400.10, Volume 4. Aircraft Equipment and Operational Authorizations, Chapter 7. Air Navigation and Communications, and Title 14 CFR Part 91, Subpart B-Flight Rules/General, provides guidance for weather reporting requirements and preflight action.

4-6. TRAINING PROGRAM. See appendix 4.

4-7. PROCEDURE DEVELOPMENT CRITERIA.

a. Procedure Construction:

(1) Criteria: A sample HEDA chart is in appendix 5, figure 5-5. A separate chart for each HEDA is not required. A certificated air carrier submits a written request with the proposed chart through the CHDO POI to the FSDO having jurisdiction over the area of intended operation. All other operators submit requests directly to the FSDO having jurisdiction over the area of intended operation. The FSDO having jurisdiction forwards the procedure to the regional AWO program manager for approval of the procedure and coordination with air traffic elements. (See appendix 1. Request For Approval of OSAP, ARA, or HEDA Procedures.)

(a) Apply paragraph 2-7a of this AC for en route criteria.

(b) The plan view of the intermediate segment and HEDA descent areas are shown in figure 4-1. The IF is the last fix prior to the HEDA. The intermediate area is the same width dimensions as the en route segment at the IF. The outside edges of the intermediate segment at the IF is drawn tangent to the HEDA area. The HEDA area is a circle that has a radius of 4 NM. The HEDA must be free of all obstacles and must be located over the water. The ROC for the intermediate segment is 500 ft with a descent charted to no lower than 900 ft MSL or no lower than the barometric MDA adjusted for the RASS. The HEDA procedure requires special authorization and equipment. Chart the following note in the plan view of chart:

" SPECIAL AUTHORIZATION REQUIRED.
WX RADAR IN MAPPING MODE, AND GPS OR LORAN C REQUIRED."

(c) The IF is established at not more than 20 NM from the HEDA coordinates.

(d) The FAP is established on the HEDA circle. A descent is made at the FAP to the MDA.

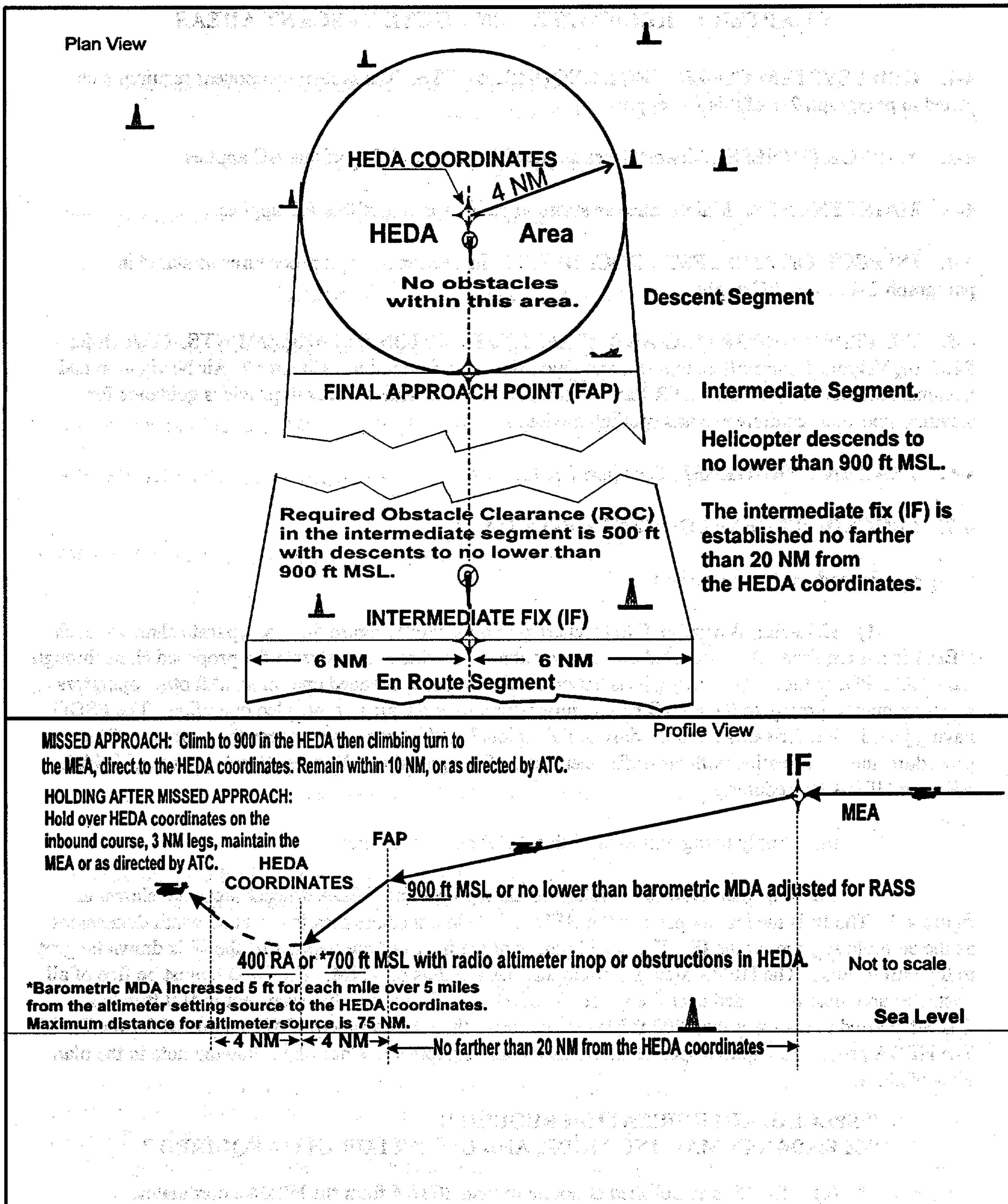


Figure 4-1. HEDA Descent Criteria.

(2) Altitude Minimums.

(a) Equipment Requirements. All required flight and navigation equipment must be installed and operative to descend to the 400 ft RA minimums.

(b) Chart the following notes: (See appendix 5, figure 5-5)

1. "The MDA is 700 ft MSL with radio altimeter or airborne radar mapping mode inoperative."

2. "The MDA is 700 ft MSL with obstruction in HEDA."

3. "Altimeter source more than 5 NM but less than 75 NM, increase MDA 5 ft for each NM over 5 NM from HEDA coordinates."

4. "Descent below 700 ft is not authorized unless HEDA is clear of all obstructions."

5. "Descent from MEA to 900 ft MSL is not authorized until within 20 NM of the HEDA coordinates."

(3) **Visibility Minimums.** Chart the following note on the published procedure: **"PROCEED VFR TO THE LANDING SITE."**

(4) Missed Approach Procedure.

(a) A missed approach procedure is made when VFR conditions cannot be established and maintained at the HEDA coordinates.

(b) Chart the following missed approach procedure instructions: **"Climb to 900, then climbing turn to the MEA, direct to the HEDA coordinates. Remain within 10 NM and hold or as directed by ATC."**

(c) Chart the following missed approach holding instructions: **"Hold over the HEDA coordinates on the inbound course, 3 NM legs, maintain the MEA or as directed by ATC."**

(5) **Filing a HEDA as an alternate in an IFR flight plan is not authorized.** Chart the following note: **"Filing HEDA as an alternate not authorized."**

4-8. OPERATIONAL APPLICATIONS.

a. En route. Offshore en route navigational guidance may be based upon any approved system appropriate to the route flown. The last en route fix is based on en route facilities. In the Gulf of Mexico the last en route waypoint prior to destination is the last en route waypoint prior to the HEDA. The radar operator obtains all relevant data for the landing area, identifies the destination area and landing site, and determines the FAP and missed approach clear zone. The radar operator then briefs the approach procedure to the other pilot before arrival at the IF.

b. Intermediate Segment.

(1) A descent below the MEA is not authorized at any point in the HEDA until the helicopter has departed the last en route fix and is offshore. The en route fix is established prior to the intermediate segment at no more than 20 NM from the HEDA coordinates. A descent to an altitude no lower than 900 ft MSL is made on this segment (See figure 3-3).

(2) The FAP altitude is no lower than 900 ft MSL or the barometric MDA adjusted for the RASS. The FAP is established at 4 NM from the HEDA coordinates.

(3) Upon arrival at the IF, the radar operator will enter the GPS or LORAN C published coordinates.

(4) Within 20 NM or at the established IF, a descent is made to 900 ft MSL.

(5) Confirmation is made by airborne radar that the HEDA is clear of obstacles.

(6) The radar operator will assure that the airborne radar and radio altimeter are operating correctly prior to descending below 900 ft MSL or the minimum intermediate altitude adjusted for RASS. The lowest barometric MDA is 700 ft MSL.

(7) The heading from the HEDA coordinates to the landing site should be confirmed in the intermediate segment.

c. Final Descent.

(1) Before descending below 700 ft MSL, the radar operator selects the lowest appropriate scale on the airborne radar, confirms the descent area is still clear, and the radio altimeter is still operative.

(2) A descent continues to 400 ft RA. Upon reaching VFR conditions, the pilot proceeds to the landing site. If the pilot cannot proceed under VFR conditions to the landing site, a missed approach procedure is executed.

d. Special Limitations.

(1) The descent area must be entirely over water.

(2) Descent below 700 ft MSL is not authorized whenever any of the following conditions exist:

(a) Any obstruction is detected in the HEDA.

(b) Radio altimeter is inoperative.

(c) Airborne radar is inoperative.

(3) Lowest altitude used for IFR flight in any HEDA shall not be lower than 400 ft RA.

e. Missed Approach Procedure.

(1) The missed approach procedure is a climb to 900 ft in the HEDA then a climbing turn to the MEA direct to the HEDA fix coordinates, remain within 10 NM of the HEDA, or as directed by ATC.

(2) The missed approach holding procedure is established over the HEDA fix coordinates on the inbound course, with 3 NM legs, maintaining the MEA or as directed by ATC.

(3) The missed procedure must be executed when any of the following occurs:

(a) Failure to establish and maintain VFR conditions at the HEDA coordinates.

(b) Failure of airborne radar or appearance of a radar target in the HEDA below 700 ft MSL.

(c) Failure of the radio altimeter below 700 ft MSL.

(4) **Lost communication procedure after the missed approach.** Execute the published missed approach procedure and then proceed direct to the alternate at the MEA.

f. Alternate Requirements. When the IFR flight plan destination is a HEDA, an alternate destination shall be filed. If the alternate is to an established onshore airport, a standard or special instrument approach procedure other than GPS or LORAN C is required.

APPENDIX 1. REQUESTS FOR APPROVAL OF OSAP, ARA, OR HEDA PROCEDURES

1. SUBMISSION OF APPLICATION FOR PROCEDURES APPROVAL. A certificated air carrier submits a written request with the proposed chart through the CHDO POI to the FSDO having jurisdiction over the area of intended operation. All other operators submit requests directly to the FSDO having jurisdiction over the area of intended operation. The FSDO having jurisdiction forwards the procedure to the regional All Weather Operations (AWO) program manager for approval and coordination with air traffic elements. The FAA will evaluate the requests to ensure that a particular radar and GPS or LORAN C or other navigation requirement combination meets minimum requirements, that flight crew training requirements are met, and helicopter and avionics maintenance requirements are adequate. FAA engineering flight test and evaluation are required if a radar is installed that has not previously been approved for obstruction avoidance. The application should include the following items:

a. OSAP, ARA, or HEDA.

(1) Include in this application a list of helicopters, the type of navigation equipment installed, and evidence of FAA approval of the airborne radar system for obstacle avoidance.

(2) A description of the equipment installation, helicopter flight manual supplements and changes, and proposed Minimum Equipment Lists (MEL), if appropriate.

(3) The training program.

(4) The maintenance program.

(5) Location of nearest weather and altimeter setting source.

(6) Charted procedure. The procedure may be charted by the operator or the FAA on a reimbursable basis. The operator will submit the original charted procedure to the CHDO with sufficient copies for the CHDO to send to the regional AWO program manager and, if appropriate, the FSDO having jurisdiction.

(7) Platform lighting.

(8) Recommendation as to night operations.

(9) Communication frequencies.

(10) Platform markings.

b. ARA (only). The request should contain evidence of an FAA approval of any required ground-based transponder beacon and a description of any ground-based transponder beacon installation. The following are required for submission:

(1) Navigation systems to be used (shore to platform).

(2) Elevation and location of all landing platforms, rigs or drilling ships, and any other obstacles within the intermediate and final approach areas.

(3) Availability and requirement for use of a platform-based radar transponder beacon.

(4) A letter from the applicant indicating willingness to enter into an agreement to pay expenses associated with procedure development and flight inspection costs incurred when accomplished by the FAA. The letter should include the name, address, and phone number of a person authorized to execute agreements on behalf of the company requesting the procedure.

c. HEDA (only).

(1) A representative pictorial and written description of the proposed HEDA.

(2) HEDA location (latitude and longitude to within the nearest tenth of a second).

(3) Operations and training manual revisions to incorporate HEDA's, if it is an initial application.

(4) The date of first intended use and the proposed length of service that authorization is sought.

2. HELICOPTER OSAP, ARA, AND HEDA PROCEDURES TO OFFSHORE PLATFORMS ARE CLASSIFIED AS SPECIAL PROCEDURES. The procedures will be developed for individual operators through various sources and issued to the users through OpsSpecs or LOA's. The OpsSpecs or LOA's usually contain conditional authorizations that apply to individual operators. The Manager of the Flight Standards Division in the region having jurisdiction for the operation is the approving authority for these special instrument approach procedures. Flight Standards Division Managers may delegate this authority to other FAA personnel. Coordination and distribution of FAA Form 8260-7, Special Instrument Approach Procedures, is accomplished by the regional AWO program manager.

3. COORDINATION. The request will be submitted to the CHDO. After reviewing the request, the CHDO will arrange a coordination meeting with air traffic elements that will be involved (center, approach control, flight service station, etc.). The POI's, in conjunction with the AWO program manager, must determine that the proposed procedure meets criteria of this AC and that positive course guidance is available for the entire route. When operations are to be conducted in a different region, the CHDO is responsible for coordinating, through its regional headquarters, with the FSDO having jurisdiction over the geographic area in which operations are to be conducted. The office having geographic responsibility will normally perform route checks and other required inspections, and forward reports of these inspections to the POI. When all requirements have been met, the POI will authorize the operator to conduct operations by means of a nonstandard OpsSpecs paragraph or an LOA.

4. SPECIFIC OPERATOR REQUIREMENTS AND PROCEDURES. Any operator that wishes to be approved for IFR offshore operations must ensure that the following navigation and facility requirements are met:

a. Route Requirements. Operators may develop these proposed and specified routes by Class I station reference navigation where adequate signal coverage is available. Outside of the area where signal coverage is available, the operator must provide a suitable means of Class II navigation. By means of validation tests in VFR conditions, POI's shall ensure that the operator is able to demonstrate adequate navigational performance for these routes before being granted approval to use them. All fix coordinates will be submitted by the FSDO having jurisdiction to the regional AWO program manager for coordination and providing alphanumeric names when required.

b. Terminal Procedures. Appropriate OSAP, ARA, or HEDA charts and operating procedures must be approved by the AWO program manager before being published in the operator's manual. The POI grants the authorization by means of a nonstandard OpsSpecs or an LOA.

c. Weather Reporting Requirements for OSAP, ARA, or HEDA. Refer to FAA Order 8400.10, Volume 4, Aircraft Equipment and Operational Authorizations, Chapter 7. Rotorcraft Authorizations and Limitations, Section 1. IFR Offshore Operations.

5. CHDO APPLICATION FOR A PROCEDURE. When the CHDO receives an application for a procedure that involves a FSDO outside of its region, the CHDO should immediately contact the other FSDO through the regional Flight Standards Division (RFSD) to ensure a timely implementation of the request. This should include, but not be limited to, the appropriate air traffic division/facility, the RFSD, and operations branch where the operations are proposed. When operations are proposed outside the certificate holding region, coordination among all concerned parties should be completed before the CHDO issues OpsSpecs or an LOA.

a. Navigational Equipment. The POI must coordinate with the principal avionics inspector (PAI) to ensure that the navigational equipment required, including radio altimeter and weather radar with a mapping mode, is appropriately installed and approved for the proposed type of operation.

b. Extended Over Water or IFR Operations Equipment. POI's must determine that all navigation equipment to be used in these operations complies with the requirements of 14 CFR Part 135.165(b).

c. Issuance of an LOA or OpsSpecs. All operators prior to conducting IFR offshore operations are required to obtain either an LOA or OpsSpecs. When POI's are satisfied that all requirements are met and that appropriate coordination with the FAA airworthiness, avionics, and flight procedures office has been accomplished:

(1) The 14 CFR Part 91 operators will be issued an LOA. A sample LOA is provided in appendix 2.

(2) The 14 CFR Part 135 operators will be issued OpsSpecs. A sample OpsSpecs is provided in appendix 3.

d. Authorization Limit. An LOA or OpsSpecs authorizing the use of HEDA procedures is valid for one year from the date of issue. Any operator wishing to obtain HEDA revalidation must submit written confirmation to the POI ensuring that the HEDA is clear of obstructions and that positive course guidance is available. The operator must provide the means for any on-site inspection by the POI.

APPENDIX 2. SAMPLE LETTER OF AUTHORIZATION FOR OSAP, ARA, OR HEDA

August 15, 1988

Teague Resources, Inc.
1234 Fifth Avenue
Wellhead, LA 98765

Gentlemen:

Teague Resources, Inc. is authorized to conduct the helicopter Offshore Standard Approach Procedure (OSAP), the Airborne Radar Approach (ARA), or the Helicopter En route Descent Area (HEDA) within the areas listed in this letter. Teague Resources, Inc., shall conduct all operations in compliance with the conditions, limitations, and procedures in this paragraph and shall conduct no other operations.

1. (description of OSAP, ARA, or HEDA)
2. (etc.)

a. Landing Minimums and Authorized Helicopters. Teague Resources, Inc., is authorized to use the following minimum descent altitude and visibility minimums for the helicopters listed in the following table providing the conditions and limitations in paragraphs b and e are met.

HELICOPTER TYPE MAKE/MODEL	MDA	LOWEST VISIBILITY AUTHORIZED

b. Required Airborne Equipment. The flight instruments, radio navigation, and other airborne systems required by the applicable Code of Federal Regulations must be installed and operational. The airborne radar, GPS or LORAN C, and radio altimeter equipment listed in the following table are also required and, except for the radio altimeter, must be operational:

HELICOPER (MAKE/MODEL/SERIES)	ADDITIONAL EQUIPMENT

c. **Weather Reporting Capabilities.** Teague Resources, Inc., is authorized to conduct (OSAP or ARA) operations when an approved source of weather observations (including wave height) is located within 10 nautical miles (NM) of the destination. Teague Resources, Inc., is authorized to conduct HEDA operations when the appropriate area forecast or weather observations from weather reporting stations approved by the National Weather Service or FAA are at or above the MDA. (See appendix 1, paragraph 4c.)

d. Flightcrew Member Qualifications. No pilot or airborne radar operator shall conduct any (OSAP, ARA, or HEDA) operations unless that person has successfully completed the Teague Resources, Inc., approved (OSAP, ARA, or HEDA) training program and has been certified as qualified for (OSAP, ARA, or HEDA) operations by the principal operations inspector.

e. Operating Limitations. No pilot-in-command shall begin or continue the final approach segment of an (OSAP, ARA, or HEDA) unless all of the following conditions and limitations are met:

(1) The operational requirements specified in chapter 2, paragraph 2-8, of this AC are stated as a minimum for the OSAP.

(2) The operational requirements specified in chapter 3, paragraph 3-8, of this AC are stated as a minimum for the ARA.

(3) The operational requirements specified in chapter 4, paragraph 4-8, of this AC are stated as a minimum for the HEDA.

f. Missed Approach Requirements. A missed approach shall be executed for an OSAP, ARA, or HEDA when any of the following conditions exist:

(1) The operational requirements specified in chapter 2, paragraph 2-8, of this AC are stated as a minimum for the OSAP.

(2) The operational requirements specified in chapter 3, paragraph 3-8, of this AC are stated as a minimum for the ARA.

(3) The operational requirements specified in chapter 4, paragraph 4-8, of this AC are stated as a minimum for the HEDA.

Sincerely,

/s/ Alan R. Brown

Manager, AEA-FSDO-62

APPENDIX 3. SAMPLE OPERATIONS SPECIFICATIONS FOR OSAP, ARA, OR HEDA

HXXX. Helicopter Offshore Standard Approach Procedures (MMDDYY). The certificate holder is authorized to conduct helicopter (OSAP, ARA, or HEDA) operations within the areas listed in this paragraph. The certificate holder shall conduct all (OSAP, ARA, or HEDA) operations in compliance with the conditions, limitations, and procedures in this paragraph and shall conduct no other (OSAP, ARA, or HEDA) operations.

a. OSAP, ARA, or HEDA Landing Minimums and Authorized Helicopters. The certificate holder is authorized to use the following (OSAP, ARA, or HEDA) MDA and visibility minimums for the helicopters listed in the following table providing the conditions and limitations in paragraphs HXXXb and e are met.

HELICOPTER TYPE MAKE/MODEL	MDA	LOWEST VISIBILITY AUTHORIZED

b. Required Airborne Equipment. The flight instruments, radio navigation, and other airborne systems required by the applicable Code of Federal Regulations must be installed and operational for (OSAP, ARA, or HEDA) operations. The airborne radar, radio altimeter, and GPS or LORAN C listed or referenced in the following table are also required and, except for the radio altimeter, must be operational for (OSAP, ARA, or HEDA) operations.

HELICOPER (MAKE/MODEL/SERIES)	ADDITIONAL EQUIPMENT

c. Weather Reporting Capabilities. The certificate holder is authorized to conduct (OSAP or ARA) operations when an approved source of weather observations (including wave height) is located within 10 NM of the destination. The certificate holder is authorized to conduct HEDA operations when the appropriate area forecast or weather observations from weather reporting stations approved by the National Weather Service or FAA are at or above the minimum descent altitude. (See appendix 1, paragraph 4c.)

d. Flightcrew Member Qualifications. No pilot or airborne radar operator shall conduct any (OSAP, ARA, or HEDA) operations in any helicopter unless that person has successfully completed the certificate holder's approved (OSAP, ARA, or HEDA) training program and has been certified as qualified for (OSAP, ARA, or HEDA) operations by one of the certificate holder's check airmen who is properly qualified for (OSAP, ARA, or HEDA) operations or by an FAA inspector.

e. Operating Limitations. The certificate holder shall not begin or continue the final approach segment of an (OSAP, ARA, or HEDA) operation unless all of the following conditions and limitations are met:

(1) The operational requirements specified in chapter 2, paragraph 2-8, of this AC are stated as a minimum for the OSAP.

(2) The operational requirements specified in chapter 3, paragraph 3-8, of this AC are stated as a minimum for the ARA.

(3) The operational requirements specified in chapter 4, paragraph 4-8, of this AC are stated as a minimum for the HEDA.

f. Missed Approach Requirements for OSAP, ARA, and HEDA. A missed approach shall be executed for an (OSAP, ARA or HEDA) when any of the following conditions exist:

(1) The operational requirements specified in chapter 2, paragraph 2-8, of this AC are stated as a minimum for the OSAP.

(2) The operational requirements specified in chapter 3, paragraph 3-8, of this AC are stated as a minimum for the ARA.

(3) The operational requirements specified in chapter 4, paragraph 4-8, of this AC are stated as a minimum for the HEDA.

APPENDIX 4. SAMPLE TRAINING PROGRAM FOR OSAP, ARA, OR HEDA

General. Operators are required to establish and maintain an approved training program appropriate to their operations before final approval of the special instrument procedure. Anyone requesting authorization to use an OSAP, ARA, or HEDA in IFR flight operations must train each flight crewmember on the following subjects: (The abbreviations of procedures enclosed in brackets [ ] indicate application only to that type of procedure.)

a. Basic Airborne Radar Principles and Operation. (Ground School 5 hours, Equipment Operation 1 Hour)

(1) Theory of Operation.

(a) Terminology.

(b) Block diagrams (P-40/50, BDX 1300/1400, etc.).

(2) Interpretation of Radar Returns.

(a) Primary.

(b) Secondary.

(c) False return, clutter, anomalies.

(d) Enhancement devices: beacons/reflectors.

(e) [ARA] Correlation of ground photos/maps with radar scope pictures, and identification of clusters/targets. (Ground School 8 hours)

(3) Equipment Limitations.

(a) Effects of precipitation.

(b) Effects of sea state and wave height.

(4) Detecting and Reporting Equipment Malfunctions.

(5) Emergency Procedures.

b. [OSAP and HEDA] GPS or LORAN C Principles and Operation. (Ground School 2 hours, Equipment Operation 3 Hours.)

(1) Introduction and Basic Principles.

(2) Controls, Indicators, and Display Functions.

(a) Display unit and functions.

(b) Data selector switch, controls, and indicators.

(c) Course deviation indicator.

(d) Receiver computer unit.

(3) **Operating Procedures.**

(a) General.

(b) Preflight and operational checks.

(c) Self-test.

(d) Initial present position entry.

(e) Magnetic variation entry.

(f) Area Navigation (RNAV) using waypoints.

(g) Leg change entry.

(h) Offset Track - Entry and steering.

(i) [LORAN C] Area calibration procedures.

(j) User defined waypoints.

(4) **Identifying and Correcting Operational problems.**

c. **OSAP, ARA, or HEDA Procedures. (Ground School 2 Hours)**

(1) **Definitions.**

(2) **Limitations.**

(3) **Minimums.**

(4) **Weather Requirements.**

(5) **Equipment Requirements.**

(6) **[OSAP or ARA] Approach Target Identification.**

(7) **[OSAP] FAP Identification and Verification.**

(8) Verification and Placement of the MAP.

(9) Final Approach Course.

(10) [OSAP] Course Adjustment to 0.5 NM Offset.

(11) [OSAP] Decision Point Altitude.

(a) Verification of equipment accuracy at DPA.

(b) Verification of minimum horizontal obstacle clearance.

(c) Using the lowest appropriate radar scale.

(12) Missed Approach.

(13) Crew Coordination, Duties, and Responsibilities.

(a) Before final approach segment.

(b) During final approach segment.

(c) [OSAP or ARA] After visual reference is established with the approach target.

(d) [OSAP or ARA] When visual reference is lost while maneuvering to the landing site.

(e) [OSAP or ARA] Upon reaching the MAP without visual reference with the approach target.

(f) [HEDA] Upon reaching the HEDA coordinates without establishing VFR conditions.

(g) [HEDA] When VFR conditions cannot be maintained while maneuvering to the landing site.

d. Flight Training. (VFR conditions 3 Hours)

(1) All assigned pilots and radar operators must complete as many trips over a route terminating in an OSAP, ARA, or HEDA under the supervision of an instructor or check airmen, as may be necessary to:

(a) Ensure their competency in the use of the equipment,

(b) Enable certification of their proficiency in the system,

(2) Recurrent training for pilots and radar operators is required annually.

e. Currency Requirements. A flight proficiency check is required annually.

f. Records.

(1) A method of maintaining flight crewmember training records must be approved by the POI prior to authorizing OSAP, ARA, or HEDA operations.

(2) Appropriate training and certification records will be maintained by each operator and shall be presented for inspection on request of the FAA.

NOTE 1: The ground school and flight-hours are for illustrative purposes only. POI's must determine, with their operators, an appropriate number of hours based on the operator's environment, experience, procedures, and equipment. POI's are directed by policy which prohibits approving any initial training program with less than a specific number of ground and flight training hours.

NOTE 2: Flight training requirements may be expressed in numbers of approaches rather than in numbers of flight-hours.

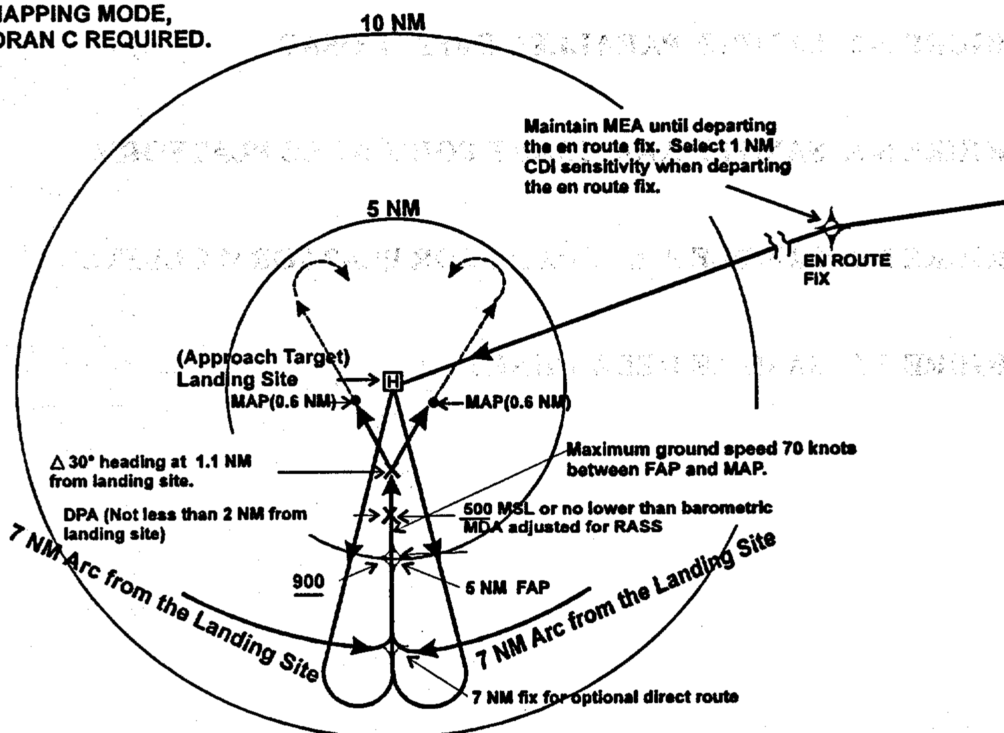
APPENDIX 5. SAMPLE OFFSHORE INSTRUMENT CHARTS

APPENDIX 5. SAMPLE OFFSHORE INSTRUMENT CHARTS

COPTER DELTA 30° OSAP

SPECIAL AUTHORIZATION REQUIRED.
WX RADAR IN MAPPING MODE,
AND GPS OR LORAN C REQUIRED.

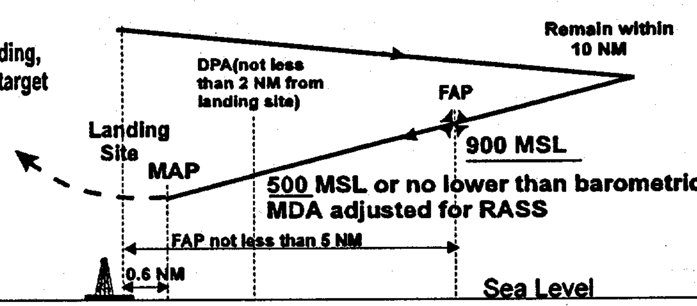
COMMUNICATIONS
FREQUENCY 118.15



Clear all obstructions by at least 0.5 NM laterally by radar after FAP inbound.
Teardrop PT or standard course reversal. Type and direction optional.

MISSED APPROACH: Climb to 900 via the Δ 30° heading, then climbing turn to the MEA, direct to the approach target within 10 NM and hold, or as directed by ATC.

HOLDING AFTER MISSED APPROACH:
Hold over the approach target on the inbound course, 3 NM legs, maintain the MEA or as directed by ATC.



Avoid radar targets by 0.5 NM laterally until reaching 900 ft MSL when making IFR departures.

MDA	VISIBILITY	RADIO ALTIMETER STATUS
RA200	3/4	OPERATIVE
*250	3/4	INOPERATIVE

*Altimeter source more than 5 NM but less than 75 NM, increase MDA 5 ft for each NM over 5 NM from landing site.

FOR FILING AS AN ALTERNATE

Use 800-2 nonprecision alternate minimums or as approved by OpsSpecs.

PROCEED VISUALLY TO THE LANDING SITE

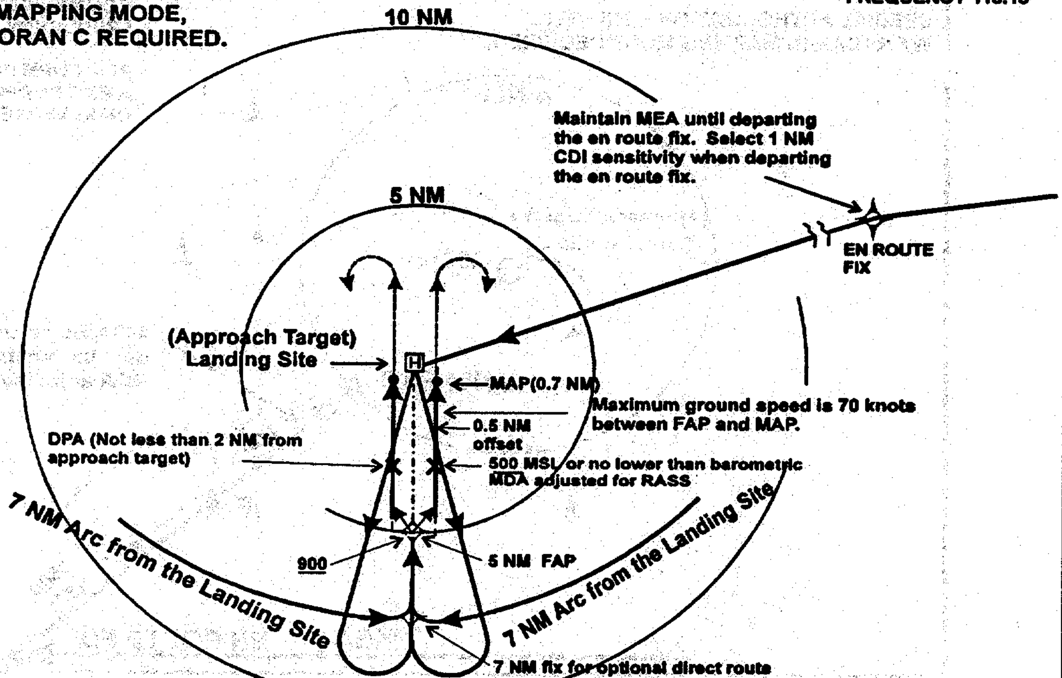
Figure 5-1. SAMPLE DELTA 30° OSAP

APPENDIX 5. SAMPLE OFFSHORE INSTRUMENT CHARTS

COPTER PARALLEL OFFSET OSAP

**SPECIAL AUTHORIZATION REQUIRED.
WX RADAR IN MAPPING MODE,
AND GPS OR LORAN C REQUIRED.**

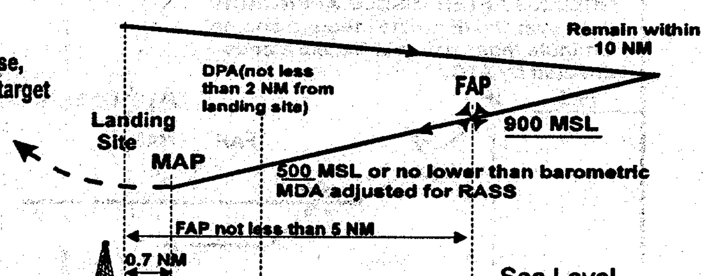
**COMMUNICATIONS
FREQUENCY 118.15**



**Clear all obstructions by at least 0.5 NM laterally
by radar after FAP inbound.
Teardrop PT or standard course reversal. Type and direction optional.**

MISSED APPROACH: Climb to 900 via the offset course, then climbing turn to the MEA, direct to the approach target within 10 NM and hold, or as directed by ATC.

HOLDING AFTER MISSED APPROACH:
Hold over approach target on the inbound course, 3 NM legs, maintain the MEA or as directed by ATC.



Avoid radar targets by 0.5 NM laterally until reaching 900 ft MSL when making IFR departures.

MDA	VISIBILITY	RADIO ALTIMETER STATUS
RA200	3/4	OPERATIVE
*250	3/4	INOPERATIVE

FOR FILING AS AN ALTERNATE

*Altimeter source more than 5 NM but less than 75 NM, increase MDA 5 ft for each NM over 5 NM from landing site.

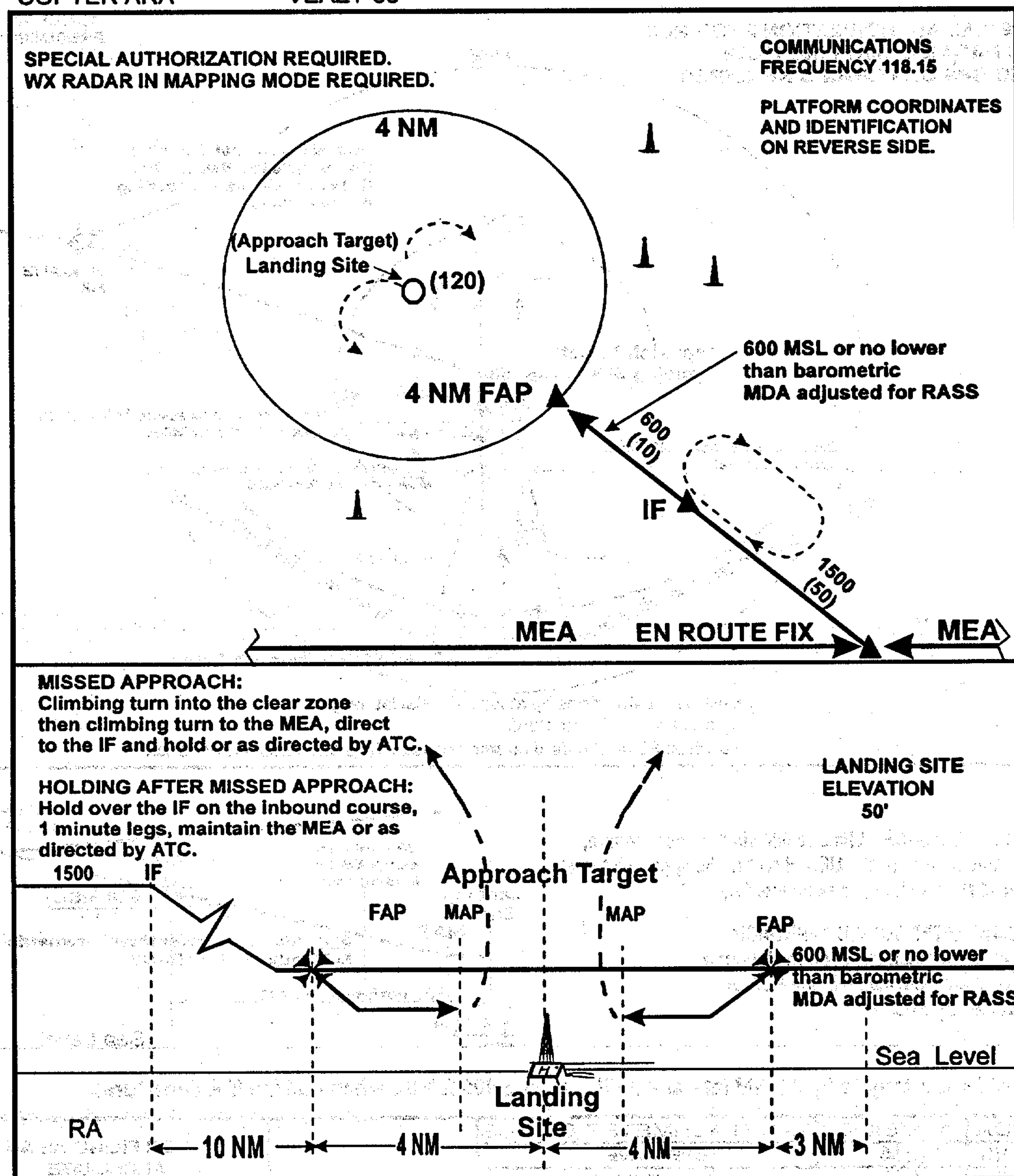
Use 800-2 nonprecision alternate minimums or as approved by OpsSpecs.

PROCEED VISUALLY TO THE LANDING SITE

Figure 5-2. SAMPLE PARALLEL OFFSET OSAP

APPENDIX 5. SAMPLE OFFSHORE INSTRUMENT CHARTS

COPTER ARA VEAZY 63



MDA	VISIBILITY	RADIO ALTIMETER STATUS	
RA200	3/4	OPERATIVE	*Altimeter source more than 5 NM but less than 75 NM, increase MDA 5 ft for each NM over 5 NM from approach target.
*380	1/2	INOPERATIVE	

OVERHEAD APPROACH (approach target to inbound turn)(4 NM)

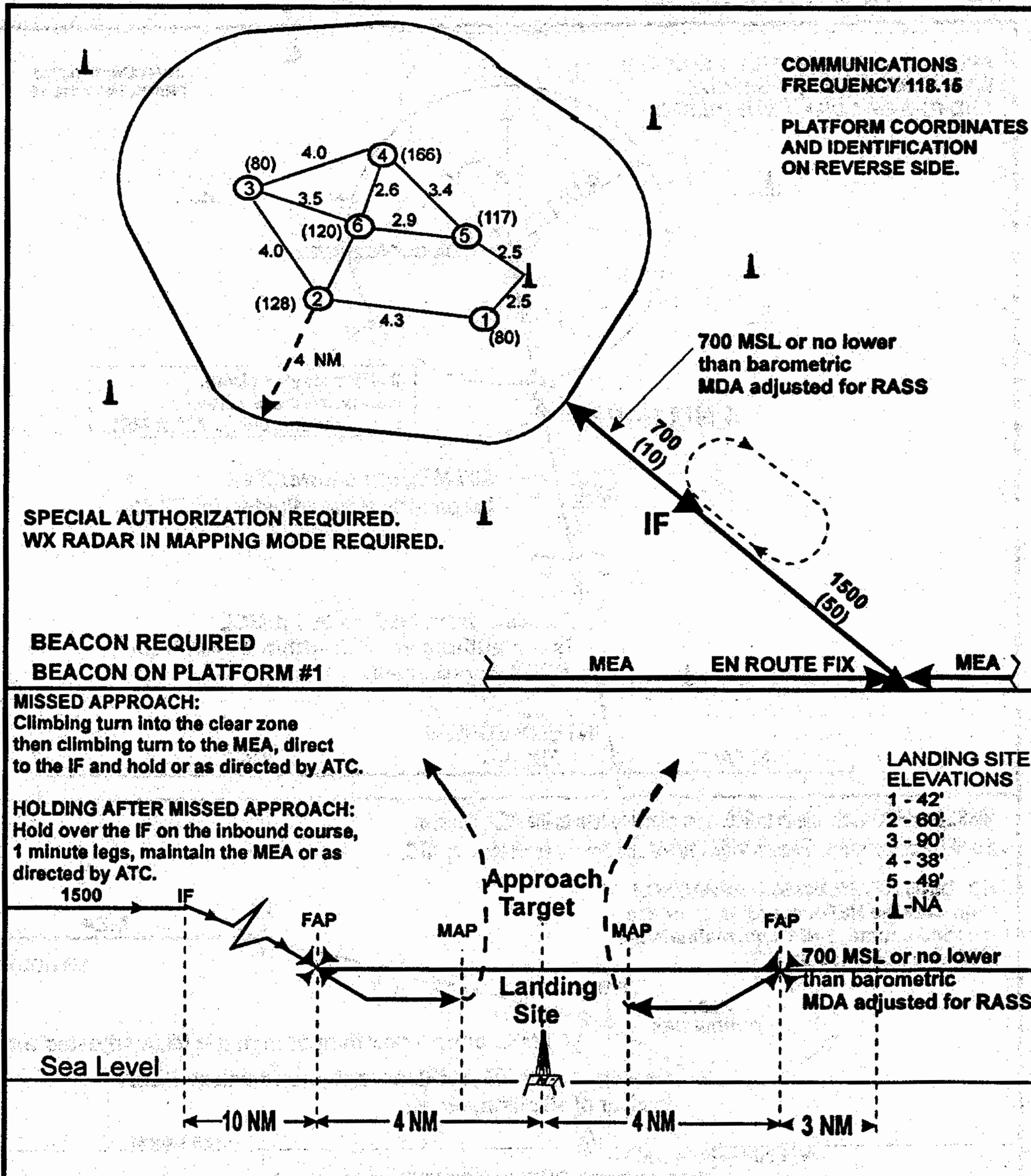
KNOTS	70	90	120	
TIME	3:26	2:40	2:00	

PROCEED VISUALLY TO THE LANDING SITE

Figure 5-3. SAMPLE ARA CHART FOR SINGLE PLATFORM

APPENDIX 5. SAMPLE OFFSHORE INSTRUMENT CHARTS

COPTER ARA WINTR 120



MDA	VISIBILITY	RA STATUS	
#RA200	3/4	OPERATIVE	# 100 ft radio altitude above the highest obstacle within the cluster if a course bearing cursor is not used.
*420	1/2	INOPERATIVE	*Altimeter source more than 5 NM but less than 75 NM, increase MDA 5 ft for each NM over 5 NM from approach target.

OVERHEAD APPROACH (approach target to inbound turn) (4 NM)

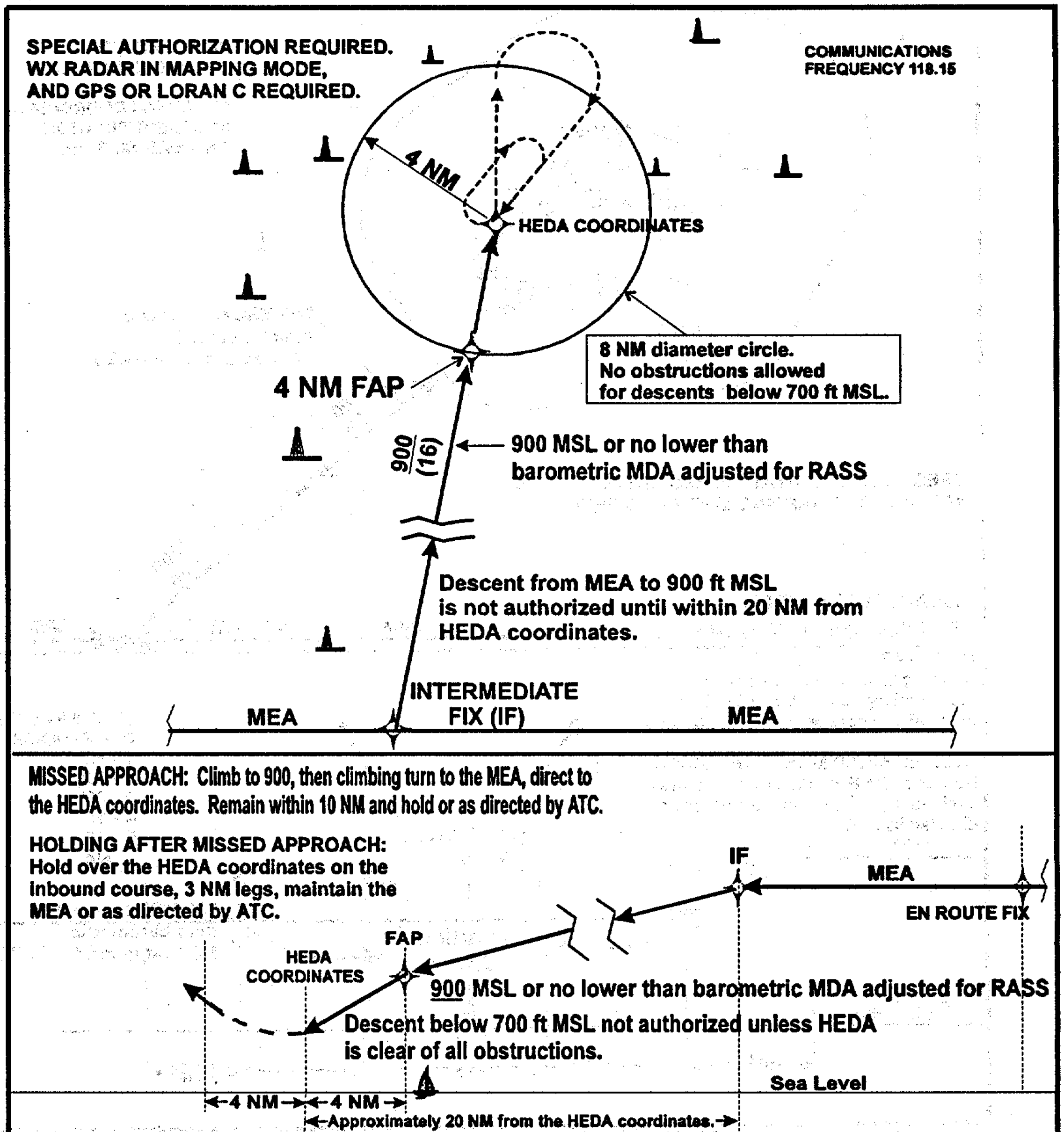
KNOTS	70	90	120	
TIME	3:26	2:40	2:00	

PROCEED VISUALLY TO THE LANDING SITE

Figure 5-4. SAMPLE ARA CHART FOR PLATFORM CLUSTER.

APPENDIX 5. SAMPLE OFFSHORE INSTRUMENT CHARTS

COPTER HEDA PROCEDURE



MDA	VISIBILITY	RA STATUS	
RA400	1	OPERATIVE	Filing HEDA as alternate not authorized.
*700	1	INOPERATIVE	

*The MDA is 700 ft MSL with radio altimeter or WX radar with mapping mode inoperative.
*The MDA is 700 ft MSL with obstruction in HEDA.
*Altimeter source more than 5 NM but less than 75 NM, increase MDA 5 ft for each NM over 5 NM from HEDA coordinates.

PROCEED VFR TO THE LANDING SITE

Figure 5-5. SAMPLE HEDA CHART.

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